This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

NYPL RESEARCH LIBRARIES
3 3433 06908677 9

VDDR
Virginia
Public

VDDA
Virginia
Public

THE

ELEVENTH, TWELFTH AND THIRTEENTH

Annual Reports

OF THE

BOARD OF PUBLIC WORKS,

TO THE

GENERAL ASSEMBLY OF VIRGINIA:

ALSO, A COLLECTION OF

ACTS AND RESOLUTIONS

OF THE

GENERAL ASSEMBLY,

Passed at the Sessions of 1826-27, 1827-28, *and* 1828-29,

AND OTHER DOCUMENTS,

ON SUBJECTS CONNECTED WITH

THE FUND FOR INTERNAL IMPROVEMENT.

VOL. V.

RICHMOND:
Printed by Samuel Shepherd & Co.
1829.

ELEVENTH

Annual Report

OF THE

PRESIDENT AND DIRECTORS

OF THE

BOARD OF PUBLIC WORKS,

TO THE

GENERAL ASSEMBLY OF VIRGINIA,

January 17th, 1827.

RICHMOND:
Shepherd & Pollard, Printers.
1827.

RICHMOND, 18th January, 1827.

SIR,

I have the honor to lay before the General Assembly, the Annual Report of the President and Directors of the Board of Public Works, prepared in conformity to the Act, entitled, "An Act creating a Fund for Internal Improvement."

With great respect, I am, sir,

Your most obedient servant,

JOHN TYLER,

President.

The Speakers of the Senate and

House of Delegates.

REPORT.

Agreeably to an Act, entitled, "An Act to create a Fund for Internal Improvement," the President and Directors of the Board of Public Works beg leave to submit their ANNUAL REPORT to the General Assembly.

* * *

The Fund consists of the following permanent and disposable funds, viz:

PERMANENT FUND.

125½	shares of stock in the Little River turnpike company,	12,550	00
250	shares of stock in the James River company,	50,000	00
7947	shares of stock in the Bank of Virginia,	794,700	00
3334	shares of stock in the Farmers' Bank of Virginia,	333,400	00
900	shares of stock in the Bank of the Valley,	90,000	00
231	shares of stock in the North Western Bank of Virginia,	23,100	00
82	shares of stock in the Swift Run Gap turnpike company,	4,100	00
70	shares of stock in the Dismal Swamp Canal company,	17,500	00
125	shares of stock in the Appomattox company,	12,500	00
70	shares of stock in the Potowmac company,	31,111	11
Certificates of James River company,		50,000	00
	Making an aggregate of	$ 1,418,961	11

of the Permanent Fund; all of which, (except the stock named in the three last named companies,) is productive of income.

DISPOSABLE FUND.

The following Stocks are acquired by the application of the income of the fund for Internal Improvement, and are disposable agreeably to the 13th section of the Act creating that fund:

375	shares in the Bank of Virginia, (lent to the Richmond Dock company,)	37,500	00
35	shares in the Farmers' Bank of Virginia,	3,500	00
50	shares in the Bank of the Valley,	5,000	00
34	shares in the James River company,	6,800	00
500	shares in the United States' Bank, (lent to the Dismal Swamp Canal company,)	50,000	00
	Loan to the Richmond Dock company,	12,500	00
	Loan to the Dismal Swamp Canal company,	50,000	00
	Loan to do. ($37,500)	15,000	00
186	shares in the Dismal Swamp Canal company,	46,500	00
1000	shares in the Richmond Dock company,	62,500	00
672	shares in the Leesburg turnpike company,	33,600	00
920	shares in the Swift Run Gap turnpike company,	46,000	00
50	shares in the Cartersville bridge company,	5,000	00
480	shares in the Fallsbridge turnpike company,	24,000	00
200	shares in the Wellsburg and Washington turnpike company,	5,000	00
400	shares in the Snicker's Gap turnpike company,	20,000	00
140	shares in the Monongalia Navigation company,	8,180	00
300	shares in the Fauquier and Alexandria turnpike company,	30,000	00
80	shares in the Manchester and Petersburg turnpike company,	8,000	00
800	shares in the Roanoke Navigation company,	76,800	00
160	shares in the Fairfax turnpike company,	4,500	00
300	shares in the Lynchburg and Salem turnpike company,	25,000	00
69	shares in the Slate River company,	1,725	00
		$577,105	00

Permanent funds in stocks,	$1,418,961 11
Disposable do.	577,105 00
Surplus and appropriation fund, in James River Certificates,	40,300 00
To which, add balance in the Treasury the 30th November last,	7,073 72
	$2,043,439 83

From these funds, permanent and disposable, which produce an income, the following sums have been received, for dividends and interest, since the 1st day of Dec. 1825, viz:

From the Bank of Virginia, on 7947 shares,		47,682 00
Ditto, 375 "		1,827 50
Farmers' Bank of Virginia, on 3369 shares,		18,529 50
Bank of the Valley, on 950 shares,		5,650 00
North Western Bank of Virginia, on 231 shares,		1,316 08
James River company, on 284 shares,		6,816 00
Little River turnpike company, on 125½ shares,		627 50
Swift Run Gap turnpike company, on 82 shares,		102 50
United States' Bank, on 500 shares,		4,000 00
Certificates of James River company loans, $50,000,		3,000 00
Loan to Richmond Dock company, $12,500,		750 00
Loan to Dismal Swamp canal company, $50,000,		11,000 00
James River surplus and appropriation fund, viz:		
For interest on $40,300, certificates of James river loan, belonging to that fund,	2,291 50	
Surplus of tolls on Canal, on 30th June last,	7,928 35	
		10,219 85
To which, add the unexpended money advanced to the engineer, and returned by him,		448 31
		$111,969 24

Th

incor

sable

fund

37

5

The certain and probable charges upon the income of the fund for the current year, will be,

Last instalment to Fairfax turnpike company,		900 00
Ditto Lynchburg and Salem turnpike company,		5,000 00
Last requisition to Roanoke Navigation company,		3,200 00
2d and 3d do. Slate River company,		3,450 00
3d and 4th instalment of loan to Dismal Swamp canal company,		15,000 00
1st instalment to Ashby's Gap turnpike company,		7,000 00
1st instalment to Staunton and James river turnpike company,		5,000 00
1st instalment to Falls Bridge turnpike company,		2,000 00
Expenses of surveys and examinations,		3,000 00
Salaries—of Principal Engineer, $3,500; 2d Auditor and Clerk, $733 33; and Collector, $300,		4,533 33
Compensation and mileage of Directors at the 11th annual meeting of the Board of Public Works,		1,150 00
Contingent expenses,		400 00
One year's interest on $1,185,000, certificates of loan by James River company,	68,973 50	
Interest on $45,000, borrowed in December last, by the Act of 1st March, 1826,	1,396 84	
		70,370 34
Making,		$121,003 67

To discharge which, the resources of the fund will be,

Balance in the Treasury on the 30th Nov. 1826,	7,073 72
Dividends from the Bank of Virginia, on 7,947 shares,	47,682 00
Dividends from the Farmers' Bank of Virginia, on 3,369 shares,	18,529 50
Dividends from the Bank of the Valley, on 950 shares,	5,650 00
Dividends from the North Western Bank of Va. on 231 shares,	1,848 00
Amount carried forward,	$80,783 22

Amount brought forward,	$80,783 22
Dividends from the James River company, on 284 shares,	6,816 00
Dividends from the Little River turnpike company, on 125½ shares,	627 50
Dividends from the Swift Run Gap turnpike company, on 82 shares,	102 50
Dividends from the United States' Bank, on 500 shares,	2,750 00
Dividends from the Bank of Va. on 375 shares,	1,827 50
Interest on loan to Richmond Dock company, $12,500,	750 00
Interest on loan to Dismal Swamp Canal company, $50,000,	3,000 00
Interest on loan to do. $37,500,	1,125 00
Interest on certificates of James river loan, $50,000,	3,000 00
Interest on certificates (belonging to the surplus fund,) $40,300,	2,291 50
Interest and dividends in arrears, due from the Dismal Swamp canal company and North Western Bank of Virginia, as per Second Auditor's estimate, marked G.	3,650 30
	$106,723 52
To which may be added, the probable surplus of tolls and rents from the James River company, estimated on the 31st December, 1826, and 30th June, 1827,	15,000 00
Total probable receipts within the year,	$121,723 52
Total certain and probable disbursements within the year,	121,003 67
Probable surplus, after meeting the engagements of the Board,	719 85
Add to this the balance of unexpended money advanced to the Principal Engineer, and returned by him,	222 61
	$942 46

The preceding expose of the state of the fund is far from being so animating, as that which was exhibited a year ago to the General Assembly. Yet, it is satisfactory to be able to state that the engagements of the Board have hitherto been faithfully met, and that notwithstanding the onerous debt imposed upon the fund for the interest yearly accruing on the loans to the James River company, the anticipated ability of the Board to meet its engagements for the current year, seems to be justified by the above statement of probable receipts. It will also be observed, that during the last year, the disposable fund has been augmented by the addition of stock to the amount of $43,225, while the amount of $62.450 79, have been paid on certificates of James river loan, a sum exceeding that which was paid the year before, on the same account, by $16,902 59. The amount of interest, for which provision is ordered by law to be made out of the fund, is now ascertained to be, for this year, $70,370 34. To this will be an addition, after the present year, increasing that sum to $71,673 50, which will be the amount of interest on the whole loan of the James River company, as authorised by several laws for that purpose. This will still leave a balance of the income of from 35 to 40,000 dollars annually, applicable to the aid of such companies as the General Assembly may deem proper to patronize. But, should any further burthen be imposed upon the income of the fund for Internal Improvement, the expectations of the numerous companies, which are now forming, or looking forward to a day not distant, when they may form themselves into bodies to prosecute and accomplish important improvements; building their hopes of aid upon the provisions and encouragement of the Act creating that fund; will be, in a great measure, disappointed. Notwithstanding the necessary and great expenses of the fund, mingled with many charges foreign from its purpose, the growth of the fund for Internal Improvement has exceeded that of any other fund in the annals of this State. It was a proud monument of the wisdom of its framers, giving the most unequivocal demonstration of its certain tendency to afford the means of diffusing the blessings of our happy government, even to the most secret recesses of our land. Depressed, as it now is by debt, its growth must be hereafter slow, and its promise scanty. Nevertheless, it has within it a recuperative energy, which will enable it to rise, with all its oppressions upon it, and yet accomplish its benign purposes, if it should be spared further imposition for a few years.

The capital, consisting of permanent and disposable stocks, amounts to $ 2,043,439 83. But, from the state of the fund herewith exhibited, it is obvious that the means in hand will not admit of any new engagements for the present year, or that which will follow. This year will close the payments to the Fairfax and Lynchburg and Salem turnpike companies, and to the Roanoke Navigation company. These payments will amount to $ 9,100. The charges on the fund for instalments to companies during the year 1828, will be in the aggregate $ 44,512 50, exceeding the amount similarly charged this year, by $ 2,962 50; and as this exceeds the estimate of probable receipts for this year, and probably will exceed those of next year, it is respectfully submitted and recommended to the General Assembly to pass an Act, directing that a premium of $ 1,000, on the last loan of $ 200,000, for the James river improvement, and $ 1,500, a premium on a late loan of $ 30,000, be paid over to the fund for Internal Improvement, as the fund is charged with the interest, as well on these as on previous loans for the same object.

The surveys and reports of the Principal Engineer, on several subjects, were presented during the summer to the ex-officio members, ordered to be printed, and are contained in the Tenth Annual Report, twelve copies of which have been transmitted to the clerks of the General Assembly. Herewith are presented, other surveys, examinations and estimates: On the examination of the Dismal Swamp canal; on a survey between Nansemond and Blackwater; on the examination of Harrison's bar; on the Rivanna river; on the survey from Staunton to Riffle's run; on the examination of the Staunton and James river road; on the examination of the canal in the Blue Ridge; on the examination of the Kanawha turnpike road; on the examination of the Little River turnpike; on the examination of the Fauquier and Alexandria turnpike; on the examination of the Manchester and Petersburg turnpike; on the examination of the Lower Appomattox, and on the improvements contemplated by the Junction canal company.

Herewith are communicated, all the reports and returns from the several companies, in the stock of which the Board is interested, viz:

The Upper Appomattox company,
Cartersville Bridge company,
Dismal Swamp canal company,
Fairfax turnpike company,
Fauquier and Alexandria turnpike company,

The Falls Bridge turnpike company,
Leesburg turnpike company,
Little River turnpike company,
Lynchburg and Salem turnpike company,
Manchester and Petersburg turnpike company,
Potomac company,
Richmond Dock company,
Roanoke Navigation company,
Snicker's Gap turnpike company,
Slate River company,
Swift Run Gap turnpike company,
Shepherdstown and Smythfield turnpike company,
Wellsburg and Washington turnpike company.

All which is respectfully submitted.

JOHN TYLER.

Richmond, 17*th Jan.* 1827.

RETURNS AND REPORTS
OF
COMPANIES.

UPPER APPOMATTOX COMPANY.

FARMVILLE, Nov. 24, 1826.

To the President and Directors of the Board of Public Works.

GENTLEMEN,

We now enclose you our Annual Report, as required by law; referring you for particulars to the enclosed papers.

We are, gentlemen,
Your obedient servants,
(Signed) THOMAS A. MORTON,
RICH'D N. VENABLE,
N. E. VENABLE,
Superintendents.

◆

Return of the state of the Upper Appomattox Company, on the first day of September, 1826.

Capital subscribed: by individuals,		48,500 00
Do. by the State,		12,500 00
Aggregate of requisitions made on stockholders,		61,000 00
Amount paid by stockholders,		61,000 00
Amount due from ditto,		00,000 00
Amount due by the Board of Public Works,		00,000 00
Amount expended in the work,		86,789 61
Debts due by the company,	5,101 04	
Interest on said debts,	5,173 90	
		10,274 94

Debts due to the company, of which may be considered ultimately good,	14,887 52	
Interest on the same,	71 19	
Bad and doubtful,	2,144 65	
Interest on do.	1,034 15	
		18,137 51
Income during the year ending August 31, 1826, viz:		
From tolls,	1,375 96	
*From rents,	000 00	
From other sources,	000 00	
Expenditures during the same period, viz:		
For improvements and repairs,	1,573 62	
Officers' salary; clerk and collector of tolls,	600 00	
Other expenses, provisions, clothing, &c. for servants and contingencies,	308 64	
		2,482 26
Dividends declared,		000 00
Balance of money on hand,		209 09

* Circumstances rendering the income from this source uncertain, the amount is necessarily blank.

Tolls of the Upper Appomattox Company, from 1*st September*, 1825, *to* 1*st September*, 1826.

240	bales of cotton,	Producing in tolls, $1,375 96.
1,606	barrels of flour,	
3,765	bushels of wheat,	
1,770½	hhds. of tobacco,	
328	bushels of corn,	
3,722	bushels of salt,	
548,508	lbs. goods,	
270	tierces lime,	
16,400	staves,	
32	loads of wood,	

NOTE.—The canal was closed on the 17th of September, to be cleaned out, and was re-opened on the 20th November.

CARTERSVILLE BRIDGE COMPANY.

SIR, POWHATAN, Dec. 7th, 1826.

From causes which I am unable to detail, there has been no meeting of the Cartersville Bridge Company during the present fall. I, however, enclose you the accounts of the treasurer of the company, up to the first of this month, with his report, prepared for the board; all of which I believe to be correct, and which exhibits the true condition of the company.

Your obedient servant,

TH. MILLER, *President,*
of the Cartersville Bridge Comp'y.

To the Second Auditor.

* * *

FRANCIS B. DEANE, Jr. Treasurer,
In account with Cartersville Bridge Company.

DR.

1826.		
Nov. 1.	To amount of receipts, as per copy of toll-keeper's account, herewith furnished,	347 09
	To amount of receipts, on account of yearly subscriptions due heretofore, as per same,	166 25
	Debits carried forward,	$513 34

CR.

1826.		
Jan'y. 5.	By cash paid discount at bank, on notes,	15 00
Feb'y. 7.	By cash paid toll-keeper his salary, for the year ending this date,	75 00
Mar. 10.	By cash paid discount,	10 00
	By cash allowed me, as treasurer, for same time,	50 00
	Amount credits carried forward,	$150 00

		Amount of debits brought forward,		513 34
		Amount of credits brought forward,	150 00	
May	9.	By cash paid for repairs,	3 00	
	10.	By cash paid discount,	10 00	
		By cash deposited to credit of Company, by Anderson, Blair & Anderson, per my order to them,	200 00	
July	10.	By cash paid discount,	10 00	
Sept.	5.	By cash paid for shingling toll-house,	15 00	
	12.	By cash paid discount,	10 00	
	25	By cash paid repairs,	1 75	
Nov.	12.	By cash to pay discount,	10 00	
				409 75
		Balance upon transactions of 1826,		103 59
		To balance due Company, Nov. 1825,		35 77
				$139 36

E. E. By

F. B. DEANE, Jr. *Treasurer.*

This balance is thus reported, that the company might more distinctly see the receipts of each year. The balance of $108 59 cents, has come into hand since the last renewal of their note, and will be paid when it again falls due.

F. B. DEANE, Jr.

The Treasurer of the Cartersville Bridge Company begs leave to report to the Board of Managers:

That he has received since the date of his annual report of the funds of the company,	513 34
That he has disbursed of those funds, for the use of the company, as will be seen by reference to accounts current, herewith furnished,	409 75
Which leaves a balance on his hands, to the credit of the company, of	103 59
To which should be added the amount on hand at the end of last year,	35 77
	139 36

Making 139 dollars and 36 cents to the credit of the company.

The debt due by the company, is		$700 00
The out-standing debt to the company, is as follows:		
Due on subscription of 1823,	41 50	
Due on same account for 1824,	85 00	
Due on same account for 1825,	135 00	
Due on same account, 1 Jan. 1827,	251 00	
	512 50	
Add to this, amount of money in hand,	139 36	
Makes a total amount, applicable to the payment of the debt of the company,	$631 86	

after the 1st of January, 1827. Of this amount, the managers will understand that $512 50 is designated as out-standing debt; consequently, subject to the delay and uncertainty of collection. This statement shews the financial concerns of the company. There are subjects not properly belonging to this report, but which require the notice of the managers, all of which I shall not now notice, deeming it more proper that they be made when the board shall convene. I deem it my duty, however, to suggest the necessity of vesting your treasurer with the authority to use coercive measures to enforce the payment of subscriptions. The reasons for this suggestion, are to be found in the amount of out-standing debt.

Respectfully,

F. B. DEANE, Jr.

DISMAL SWAMP CANAL COMPANY.

To the President and Directors of the Board of Public Works.

The Directors of the Dismal Swamp Canal Company herewith present a statement of the work under their management and superintendence, according to the forms required by the Board of Public Works.

From causes which the directors could not control, very little progress has been made towards the completion of the canal, since the date of their last report to the Board of Public Works.

Some time since, the directors of this company were satisfied, that without considerable addition to their funds, it would be impossible to complete the canal in a manner contemplated, and to make it a work at once important and profitable. With this impression, applications were made to the Legislatures of North Carolina and Virginia, to permit an augmentation of the capital stock of the company. The Legislatures of both States passed Acts, allowing six hundred additional shares to be subscribed for, amounting to one hundred and fifty thousand dollars. As directed by those Acts, public notice was given of the opening of the books, in order that the then stockholders might have a preference in subscribing. At the end of the time prescribed by the Acts, no person whatever having subscribed, the Secretary of the Treasury of the United States, under the authority of an Act of Congress, passed on the 18th of May last, subscribed for the whole number of shares authorised by the Acts of the Legislatures of Virginia and North Carolina, and the United States now hold six hundred shares in the capital stock of this company; whereby the capital stock is increased to three hundred and ten thousand dollars, divided into twelve hundred and forty shares of two hundred and fifty dollars each.

By the Act of Congress mentioned, the Secretary of the Treasury was not permitted to subscribe for any part of this stock, until a survey and report were made by the U. States' Board of Engineers, for ascertaining certain facts mentioned in the Act of Congress. Surveys and report have been made, and a copy of the report is herewith submitted. With this report, the directors also present to the Board of Public Works an estimate made by the Engineers, of the probable expense of completing the canal. The report and estimate will exhibit a clear view of the manner in which the directors contemplate to finish the work: and the directors will proceed to discharge the duties imposed on them, with all the dispatch in their power; and with this view, they have engaged the services of a competent engineer.

The returns required, and made herewith, will exhibit a state of the income of the company, during the past year.

JOHN COWPER,
JOHN TABB,
JOHN TUNIS,
Directors.

Norfolk, Nov. 30th, 1826.

◆

Return of the state of the Dismal Swamp Canal Company, on the 30*th November,* 1826.

Capital stock subscribed:			
By individuals,	96,000 00		
By the State,	64,000 00		
By the U. States,	150,000 00		
All paid in.			310,000 00
Amount expended in the work, from its commencement, say:			
Real estate acquired,	3,211 40		
Old account of expenditures,	442,266 21		
New ditto,	3,424 38		
Account of discount and interest,	50,554 78		
		499,456 77	
Debts due by the company:			
To sundry individual loans,	12,944 23		
To the Board of Public Works,	68,118 38		
To Banks, on personal security,	66,500 00		
To Banks, on stock borrowed,	50,000 00		
Carried forward,	$197,562 61	$499,456 77	$310,000 00

Brought forward,	$197,562 61	$499,456 77	$310,000 00
To Farmers' Bank, for discount,	11 70		
To Bank of Virginia, for discount,	594 58		
			198,168 89
Debts due to the company:			
By the Bank of United States, old account,	616 03		
By the Bank of United States, on account of the Board,	6,575 62		
By D. M. Curtis,	11		
		7,191 76	
Income, say:			
Amount of toll account the 30th November, 1825,	125,344 96		
Since, and during 1826, (to 30th Nov. 1826,)	11,110 72		
	136,455 68		
Received from Yates & M'Intyre, for 1st instalment of contract,	3,000 00		
			139,455 68
Balance of money on hand, as per cash account,		140,976 04	
		$647,624 57	$647,624 57

Expenditures during the last year, improvements and repairs,		5,580 48
Officers' salaries, and collecting tolls:		
M. Parks, for December, 1825,	100 00	
D. M. Curtis, to Nov. 1826,	412 50	
H. Garrett, ditto,	418 00	
A. Feret, to December, 1825,	100 00	
W. Harper, lock-keeper, to this day,	150 00	
John Wallace, do. do.	85 00	
D. Barry, do. do.	41 00	
Amount carried forward,	$1,306 50	

Amount brought forward,			$1,306 50	
L. Fentress, lock-keeper, to this day,			28 11	
W. Chamberlayne,	do.	do.	32 00	
Stephen Snowden,	do.	do.	20 00	
				$1,386 61

Dividends declared: none at any time.

A. FERET, *Accountant.*

Norfolk, Nov. 30*th*, 1826.

◆

WASHINGTON, 2d August, 1826.

Major General ALEX'R MACOMB, *Chief Engineer.*

SIR,

In obedience to the instructions of the department, assigning to me, as a member of the Board of Engineers, the duty of carrying into effect the 3d section of the Act of Congress of the 18th May last, in relation to the Dismal Swamp Canal, I have the honor to report:

That it is my opinion that the plan on which the canal is to be executed, will answer, as far as circumstances shall permit, as a part of the chain of canals contemplated along the Atlantic coast; and that the sum authorised to be subscribed for, will be sufficient to finish it according to said plan, with the additions recommended, and hereafter particularly described.

There were no regular plans relating to the canal, in the possession of the canal company. The plans above alluded to, are those which were necessarily prepared to illustrate the opinion required to be furnished, in fulfilment of the 3d section of the law above stated. They are, however, adapted to the existing circumstances of the canal, and, therefore, may be considered as the regular plans of the canal.

The system of coastwise navigation is supposed to be understood as requiring a depth of eight feet. The Board of Engineers, in relation to the Chesapeake and Delaware and Raritan canals, reported as their opinion, that that depth was necessary. Their report was before Congress at the time the law under which this opinion is given was passed. It might be presumed, therefore, that the allusion in the law to the chain of canal navigation, had reference to that depth. It is also to be presumed, that it was the intention of Congress that the Dismal Swamp canal should be of that depth, if circumstances would permit. But, it is also to be considered, that the exhibit of the canal company, in which it is stated what were the existing circumstances of the canal, and the papers published, document 15, of the last session of Congress, in which an opinion is expressed favorable to the adaptation of those circumstances to the continuation of the coastwise canal navigation, were also before Congress at the time it was passed. It is, therefore, to be inferred, that the great importance, in a national point of view, of having a continuous coastwise navigation, of a depth sufficient to accommodate the greatest draft of coasting vessels, induced the Congress to desire that all proper means should be taken to determine its certainty, whether or not it would be practicable to secure this important facility to commerce, to the extent desirable. But, the paramount consideration was, to secure the continuation of the navigation, not uniformly at the greatest depth, but at any depth, which would fulfil the usefulness contemplated. Hence it is presumed, that the Board of Engineers, which had expressed opinions in relation to the other canals mentioned, were required to express their opinion in this case.

It is manifest, from the state of the facts before Congress, that the continuation of the canal, with the greater depth stated, was hardly expected. It is, therefore, unnecessary to enter into any details to sustain the opinion which has been herein before given, in relation to the adaptation of the plan with existing circumstances, which are known to be obstructions of the navigation of the sounds and inlets of North Carolina. The nature of those obstructions has been fully exhibited in the reports on the subject which have been presented to Congress, and published.

The only question to be considered was, whether they were susceptible of improvement, and if so, in what degree. This circumstance has not been overlooked. From the best information which could be obtained, it appears entirely doubtful if those waters are susceptible of any improvement whatever. As far as facts are known, the conclusion would be warranted that they are not susceptible of improvement.

In recommending the plan submitted herewith, it is proposed to state that it has been adapted to existing circumstances. The permanent locks, already finished, and which form a large item in the cost of the canal, were necessarily made the standard to which other circumstances were adapted. In this adaptation, it would have been desirable that the width of the canal, at the water-line, could uniformly have been about 48 feet, that width being necessary to afford vessels of the

An estimate for the outfall lock in Carolina, of seven feet water, 9 *to* 8 *feet lift, with culverts and every other part corresponding with the other locks on the Dismal Swamp Canal.*

1050	perches building stone, at $3,	3,150 00
1260	feet coping, at 55 cents,	693 00
2	sill stones, 5 feet square,	50 00
970	feet large pier stones, at 60 cents,	582 00
650	feet do. do. ashlers,	260 00
90	casks lime,	180 00
350	do. cement,	1,400 00
2000	bushels coarse sand, at 10 cents,	300 00
1500	do. fine do. at 5 cents,	60 00
8500	feet 2 inch plank, at $25,	212 50
1500	" heart pine plank, at $30,	45 00
2250	" 4 inch plank, at 5 cents,	112 50
1250	" heart do. at 7 cents,	87 50
6000	" northern pine plank, at 2 cents,	120 00
793	" white oak timber, at 15 cents,	118 95
1044	" heart pine, at 14 cents,	146 16
14321	" sap pine, at 9 cents,	1,288 89
190	piles, 10 feet long, 12 diameter, at 25 cts.	47 50
	Freight of stone from Deep creek,	1,175 00
	Mason and stone cutters' work,	3,000 00
10000	Baltimore bricks, at $9,	90 00
	Carpenters' work,	1,060 00
	Castings,	80 00
	Blacksmiths' work,	790 00
1450	wt. spikes, at 10 cents,	145 00
650	wt. cut nails, at 8 cents,	52 00
294	wt. wrought nails, at 16 2-3 cents,	49 00
500	wt. lead, at 10 cents,	50 00
	Rigging and leather,	150 00
2	common pumps,	50 00
6	bbls. tar and turpentine,	15 00
90	gallons fish oil, at 50 cents,	45 00
20	do. linseed oil, at $1,	20 00
5	kegs white lead, at $4,	20 00
5	dozen spades, at $11,	55 00
Excavation and pumping water, and other labor,		3,000 00
		$18,700 00

FAIRFAX TURNPIKE COMPANY.

City of Washington, Dec. 1, 1826.

To the Secretary of the Board of Public Works, Richmond, Va.

Sir,

I have the pleasure of stating below, the income and expenditure of the Fairfax Turnpike Company, since the 27th of Nov. 1825.

I am, very respectfully,
Your obedient servant,
JOHN H. REILY,
Treasurer.

* * *

Income:		
From stockholders,		50 00
From tolls, from Aug. 1st, 1825, to 1st Nov. 1826,		140 32
Balance of money in hand, Nov. 27th, 1825,		403 13
		593 45
Expenditures:		
For repairs,	102 25	
Expenses in collecting tolls,	119 17	
Advertising,	3 50	
		224 92
Balance,		$368 53

Nothing is due by stockholders, or from any other source, to the company, and no dividends have been made.

FAUQUIER AND ALEXANDRIA TURNPIKE COMPANY.

ALEXANDRIA, 1 Dec. 1826.

SIR,

I send you herewith enclosed, a statement of the affairs of the Fauquier and Alexandria Turnpike Company, for the year ending 31 Oct 1826; and am,

Very respectfully, sir, your ob't serv't,

J. MORGAN, *Treas'r.*

J. Brown, Jr. Secretary of the
Board of Public Works.

* * *

Return of the state of the Fauquier and Alexandria Turnpike Company, from 1 *Nov.* 1825, *to* 1 *Nov.* 1826.

Amount of capital stock subscribed,	70,600 00	
Of which has been forfeited, according to law,	18,300 00	
remains,		52,300 00
Amount subscribed by Board of Public Works,		30,000 00
Amount of payments by individuals,		62,651 00
Amount of payments by Board of Public Works,		30.000 00
Amount due by Board of Public Works,		00,000 00
Amount due by individual stockholders,		7,549 00
Amount of capital expended on the road,		104,026 00
Amount of tolls received from 1 Nov. 1825, to 1 Nov. 1826,		1,194 78
Amount expended out of tolls, in improvements and repairs,		1,194 78
Officers' salaries, and expenses of collecting tolls, viz:		
4 toll-keepers, 3 of whom, at $140, and 1 at $100 per annum,	520 00	
Superintendent of the road,	250 00	
Treasurer,	250 00	
		1,020 00
Amount of debts due by the company,		17,875 93
Amount of debts due the company, other than from stockholders,		000 00
No dividends.		

REPORT.

During the last year, there have been made and completed, about four miles of the new road from Buckland to Warrenton, and the whole of that route will be finished, according to contract, by the close of this year, all done upon M'Adams' plan, in the best manner. Of the old road, there have been taken up, and re-made upon M'Adams' plan, two miles and about 200 yards; which will make a distance of more than ten miles of road, made upon this new and highly improved system: turnpike gates, however, have not yet been established upon it, consequently, but little tolls could have been collected; in addition to which, the country roads in the neighbourhood having been good during the season, much of the travel has been upon them; the roughness, too, of that part of our old road not yet repaired, has tended to throw off the travel. After the close of the present year, however, toll-gates will be erected along the whole line of the road, which will necessarily increase the receipts of tolls, but it cannot be expected that it will become profitable until the whole of the old road is made more easy for carriages. Some difficulties of importance present themselves in the accomplishment of this desirable object, but no means will be left untried which will enable the directors to accomplish it.

J. MORGAN,

1*st November*, 1826. *Treasurer.*

FALLS-BRIDGE TURNPIKE COMPANY.

Return of the state of the Falls-Bridge Turnpike Company, on the 5th day of December, 1826.

Capital subscribed by individuals,	56,521 40
Subscribed by the Board of Public Works,	32,000 00
Aggregate of requisitions made on individual stockholders,	56,521 40
Amount paid by individual stockholders,	52,269 42
Amount due from individual stockholders,	4,251 98
Amount carried forward,	$201,564 20

Amount brought forward,	$201,564 20
Amount due from the Board of Public Works,	8,000 00
Amount expended in the work,	76,306 29
Debts due to the company, other than on account of stock,	000 00
Debts due by the company,	23,642 39
Tolls received from the 5th December, 1825, to 3d December, 1826,	1,281 73
Income from rents and other sources,	000 00
Expended in improvements and repairs,	2,210 30
Officers' salaries, and expenses of collecting tolls: Treasurer, $50: Toll-keeper, $100: Superintendent, $80,	230 00
All other expenses, and for what:	
President and Directors going on the road,	000 00
Printing and stationery,	35 56
Dividends declared, and when,	000 00
Balance of money in hand,	000 00

* * *

OFFICE OF THE FALLS-BRIDGE COMPANY,
Georgetown, December 5th, 1826.

SIR,

In obedience to the Act of Assembly of Virginia, I have the honor, herewith, to hand you the Annual Report of the affairs of this company.

In the course of the last summer, a contract was made by the directors for the completion of the whole of the unfinished road from the Difficult run to Drane's tavern, of about six miles, and the work commenced under the most favourable prospects. A long and severe illness, however of the contractor, considerably retarded the progress. It is now renewed with spirit: about a fourth, or one and a half miles, is done in a most satisfactory and substantial manner, and it is hoped that the whole will be completed in the ensuing spring and summer. That part of the road from the District line to the Difficult bridge, has been greatly and permanently improved during the summer and fall, and considerable expense incurred in repairing the damages by heavy falls of rain, and otherwise.

With great respect, I have the honor to be, your ob't serv't,

C. SMITH, *President.*

To J. Brown, Jr. Secretary to the Board of Public Works.

LEESBURG TURNPIKE COMPANY.

Return of the state of the Leesburg Turnpike Road Company, on the 1st December, 1826.

Capital subscribed,		$84,000 00
Aggregate of requisitions made on stockholders,		50,400 00
Amount paid by stockholders,		47,712 41
Amount due by individual stockholders,		2,687 59
Capital expended in the work,		all.
Tolls received from 1st July, 1825, to 1st July, 1826,		5,025 25
Sums expended out of the tolls, in improvements and repairs,		1,047 33
Officers' salary, and expense of collecting tolls, viz:		
John Rose, President, salary,	100 00	
4 Directors, $25 each,	100 00	
Treasurer's commission for receiving and paying,	100 50	
2 Toll-gatherers, at $150 each,	300 00	
		600 50
For all other expenses, viz:		
For printing,	19 75	
Clerks' and Sheriffs' fees,	19 47	
Interest on $3,500, from 15th July, 1825, to 28th July, 1826,	240 00	
For fuel,	43 00	
		322 22
Dividend declared July 1, 1826, being 4 per cent. on amount paid in by individual stockholders,		1,916 29
Balance of toll money in hand,		365 36
Debts due by the company, viz:		
To the branch Bank at Leesburg,		3,000 00
To James M'Kendrick & Co. for making road,		53 34
To John M'Aleer & Co. for ditto,		309 82
Debts due to the company other than from stockholders,		nothing.

E. E.

SAMUEL W. EDWARDS, *Treasurer.*

December 4, 1826.

LITTLE RIVER TURNPIKE COMPANY.

ALEXANDRIA, 11th month, 15th, 1826.

J. Brown, Jr. Secretary to the Board
of Public Works, Richmond.

Herewith thou wilt please receive a copy of the report made by the President and Directors of the Little River Turnpike Company, to the stockholders at their last annual meeting, shewing the state of the affairs of the Company at that time.

The report was unanimously approved, and in conformity therewith, the Board met on the first day of April, and after examining the Treasurer's accounts, declared a dividend of five per cent. payable on the fifth of said month, of which due notice was given by Josiah Thompson, Esq. Treasurer of the Company.

Very respectfully, thy friend,

Signed, PHINEAS JANNEY, *Pres't.*
Little River Turnpike Company.

* * *

The President and Directors of the Little River Turnpike Company, respectfully report to the stockholders, that they have examined the Superintendent's and Treasurer's accounts and vouchers, and find that the receipts for tolls, for the year ending 31st of December, 1825, amounts to fourteen thousand four hundred and ninety-eight dollars and twenty-nine cents,

		$14,498 29
To which add balance in the Treasurer's hands, per his account, 1824,		2,611 19
		$17,109 48
And there has been expended by the Superintendent on the upper district of the road, comprising about 18 miles, including his salary of $350, the sum of	2,120 37	
And by the Superintendent of the lower district, comprising about 16		
Carried forward,	2,120 37	$17,107 48

Amt. of receipts, brought forward,		$17,109 48
Amt. expenditures, brought forw'd	2,120 37	
miles, including the building a stone bridge, between the 13th and 14th mile stones, and Superintendent's salary of $350,	2,678 53½	
Paid salaries of all the gate-keepers,	1,550 00	
Ditto of the president, $150; 4 directors, at $75 each,	450 00	
Ditto Treasurer's commission on $14,498 29, at 2 per cent.	289 96	
Ditto Treasurer's compensation for collecting from toll-gate keepers, &c.	40 00	
Ditto expense of stockholders at general meeting,	40 75	
Ditto Marshal and Clerk's fees, $24 22½; Attorney's fee, $10,	34 22½	
Ditto Printer's bill, $6 75, Hack hire, $6 00,	12 75	
Ditto dividends to stockholders by the Treasurer,	7,302 50½	
		14,519 17½
Leaving in the Treasurer's hands, as per his account examined, a balance of		$2,590 30
There is property belonging, and debts due to the Company, as per schedule exhibited by the Treasurer, supposed to be worth the sum of		486 34
		$3,076 64
The Company owes dividends, payable in cash,	$493 37½	
And for dividends payable in stock, at par,	400 47	
		893 84
Leaving a clear surplus of funds now on hand,		$2,182 80

The President and Directors further report, that the balance as stated, say $2,182 80, now on hand, as profits, has accrued since the first day of April last, at which time the last dividend was declared, and they now take the liberty of calling the attention of the stockholders to the report made to them, last year, relative to the time and manner of declaring dividends; which was then adopted by the stockholders present, and acted upon by the Board.

The President and Directors now recommend to the stockholders, to authorise the Board that may be elected for the present year, to declare such dividend as the state of the funds of the Company may admit of, on the first day of April next, payable on the fifth of said month, by which time, it is believed, there will be ample funds to pay five per cent. Which is submitted.

Signed, PHINEAS JANNEY, *President.*
CHARLES LEWIS,
REUBEN JOHNSON,
GEO. CARTER,
WM. H. FITZHUGH, } *Directors.*

True Copy,
JONAH THOMPSON, *Treasurer.*

Alexandria, 6th Jan. 1826.

LYNCHBURG AND SALEM TURNPIKE COMPANY.

LYNCHBURG, December 4th, 1826.

J. Brown, Jr. Second Auditor.

SIR,

You will find enclosed a report, shewing the state of the Lynchburg and Salem Turnpike Company, in conformity with the provisions of an act of Assembly, passed on the 4th day of March, 1819. There has been one section only of the road entirely completed, since the subscription made to the Company by the Board of Public Works, in behalf of the State, on which a toll-gate was erected during the last summer. By virtue of an act of Assembly, passed on the 17th day of February, 1823, authorising a subscription on behalf of the State, for a part of the stock of said Company, the Fund for Internal Improvement is entitled "to participate in the tolls of the said road, so soon as a section thereof is completed, after the payment of any part of the stock of the said fund, in the proportion which the sum so paid bears to the sum actually expended on the said road."

In consequence of the almost unexampled rain which fell in this part of the country, on the night of the 25th of June last, the arched bridge over Burton's creek, in the first section of the turnpike road, built of stone, which was protected by stone walls to a considerable height, and filled in with dirt, was entirely swept away, leaving a chasm of from fifty to sixty feet wide. During the same night, the stone wall erected by the said Company, along Major Read's mill-dam, in the 3d section of the said road, was also carried away. Besides these two places, considerable damage was done along the whole line of the road, the expense of repairing which has amounted to the sum of two thousand and ten dollars, exclusive of the sum paid for ordinary repairs; and has absorbed all the tolls of the Company for the last six months: so that no dividend can now be declared. The tolls have been greatly lessened by the throwing open of all the gates, which was rendered necessary by the damage done to the road. The four sections of the road now completed, are at present in good condition, and a respectable dividend may be anticipated for the next six months, unless some similar accident should happen to the road.

The fifth section of the road reaching to the town of Liberty, in Bedford county, is in considerable progress, and will probably be completed during the next year. In all the contracts heretofore made by the Company, for the construction of the road, it has been required, that a bed of large rock or stone should be laid at the bottom, upon which should be a bed of pounded rock or gravel, of about five inches. The road has been generally made convex on the upper surface, for the purpose of carrying off the water on the sides of the road. Experience has proved that both these plans are injudicious. The large stones are continually working from the bottom, in consequence of which the pavement in the middle is prevented from acquiring the form of a solid mass, while the convex form of the road, by throwing off the water on the sides, causes a constant loss of the earth from the summer roads. To remedy these evils, a change has been made with the contractor, on a part of the fifth section, by which the plan of M'Adam is in some measure adopted, requiring that the whole pavement should be rock or stone pounded fine, and seven inches deep, instead of five inches of large rock at bottom, and five inches of pounded stone or gravel at top. The road is now made as level as possible on the top, with washes in such places as will carry off the water, and prevent any damage to the road from washing. As the proper manner of constructing roads has become better understood, the cost of the road has greatly diminished. The first contract of ten miles was made at the rate of four thousand five hundred dollars per mile, while the last contract has been made at the rate of two thousand six hundred dollars per mile. The damages assessed by freeholders, are, however, much higher than were formerly assessed. The damages allowed during the last summer, for running the turnpike road about two miles, a great part of which was along the course of the old road, amounted to one hundred and ninety dollars, and the *incidental damages* for hauling stone from the adjacent land, amounted to the sum of two hundred and fifteen dollars on the same line of two miles.

No requisitions have been made on the stockholders during the present year; as the fund advanced by the Board of Public Works, was found sufficient to meet the contracts on the road. It is probable that the greater part of the balance due by stockholders upon their stock, will be called in during the next year. As soon as all the stock shall be paid in, it will be for the Legislature to say upon what terms the tolls shall be applied to the farther extension and completion of the said road.

WM. RADFORD, *President.*

* * *

Return of the Lynchburg and Salem Turnpike Company,
30th November, 1826.

Capital subscribed by individuals, 739 shares, at $100,		$73,900 00
Ditto by Board of Public Works, 300 shares,		30,000 00
Aggregate of requisitions made on individual stockholders,		62,815 00
Amount paid by	ditto,	51,325 00
Amount due from	ditto,	11,490 00
Amount due by Board of Public Works,		5,000 00
Amount expended in the work from its commencement,		76,523 00

Debts due by the Company,		459 87
Debts due to the Company from delinquent stockholders, after the sale of their stock,		6,486 82
Income during the year 1826, viz:		
Tolls received from 1st December, 1825, to 30th November, 1826,		4,531 53
Expenditures during the year 1826, viz:		
Ordinary repairs of the road,	648 00	
Extra do. occasioned by loss of bridges, &c. from heavy rains last summer,	2,010 00	
		2,658 00
Officers' salaries:		
Clerk to the Board of Directors,	80 00	
Book-keeper and Treasurer,	350 00	
		430 00
Expenses of Directors at taverns, during time of business, Clerks' tickets, printing, &c.		99 99
Expenses collecting tolls:		
Toll-gatherer's salary at the 1st toll-gate,	300 00	
Ditto do. 2d do.	175 00	
Ditto do. 3d do.	200 00	
Ditto do. 4th do.	200 00	
		875 00
Damages for the road running through lands of individuals, from its commencement,		1,436 43
Dividend declared on 739 shares, 15th June, 1826, of 2 per cent. on each share, payable at same date,		000 00
Cash on hand,		418 68

ALEXANDER TOMPKINS, *Treasurer.*

(*SEAL.*)

MANCHESTER AND PETERSBURG TURNPIKE COMPANY.

MANCHESTER, Dec. 4, 1826.

SIR,

The Directors of the Manchester and Petersburg Turnpike Company, have instructed me to transmit to you, this their annual report, for the information of the Board of Public Works.

Since our last report, the southern section has been completed, and toll received thereon for five months past.

The middle (and last) section is also in great forwardness. To be finished, there remains less than two miles of that part of it, where gravel is not considered necessary; and it is expected, that with a force greatly short of what the Company has been accustomed to employ, the whole will be completed by the first of April.

The following is a condensed view of the expenditures, debts, and resources of the Company:

FIRST.

The amount of capital stock subscribed, including that held by the Board of Public Works, is	$76,000 00
Aggregate of requisitions made on individual stockholders,	67,900 00
Amount paid by individual stockholders,	63,379 00
Amount that will probably be collected from individual stockholders,	250 00
Amount paid by Board of Public Works,	8,000 00
Amount of tolls, received and due, from 1st Dec. 1825, to Nov. 30th, 1826,	2,715 35

SECOND.

The total expenses in carrying on the Company's operations from their commencement to the close of the present year,	90,175 51
Deduct amount of debts on the 31st Dec. 1826,	12,750 00
There remains the amount received, settled, and paid away, including the tolls,	77,425 51

THIRD.

Debts due the company from the Board of Public Works,	00 00
Sundry stockholders,	250 00
For tolls, payable 31st December, 1826,	350 00
Estimated tolls to that time,	300 00
Deduct	650.00
The aggregate amount of tolls, from the amount then due by the company,	12,750 00
There will remain an amount due from the company, beyond their immediate resources, of	12,100 00

FOURTH.

Annual Salaries of Agents.

To the senior overseer,	190 00
To the junior overseer,	165 00
To two toll-gatherers, $300 each, and fuel to one, worth $25,	625 00
To an assistant,	72 00
To the Clerk and accountant,	80 00
	$1132 00

Of the debts which the company will owe at the termination of this year, six thousand dollars will be due to the banks in Richmond, for which, as well as the greater part of the residue, our Directors have become individually responsible.

Such a state of things causes them much trouble and anxiety. Bank transactions are always troublesome. But when endorsers are numerous, and some situated remote from the scene of business, difficulty and labor frequently attend the procurement of their names, and in spite of all the vigilance that can be used, even some of those residing more conveniently will sometimes, unexpectedly, be absent when discount days come round; which is always a fruitful source of perplexity to the others, and often productive of unpleasant feelings with the banks themselves. Moreover, it seems neither to accord with justice, nor to be compatible with the interests of companies formed for the purposes of Internal Improvement, that such a burthen should be thrown upon the shoulders of their Directors. Indeed, it cannot be doubted, that a dread of encountering them often deters gentlemen from accepting seats at their boards, whose probity, intelligence, activity and public spirit, would otherwise render their services of incalculable value to such institutions. But, worse than all, in our present situation we are precluded from reaching that point of justice, which all concerned are most anxious to attain, the payment of debts due to individuals.

Against a train of evils, whereof a very imperfect view only, is herein set forth, the Directors of the Manchester and Petersburg Turnpike Company intend applying to the Legislature for relief.

Two modes present themselves to view, as calculated to afford this relief:

First, By the Legislature authorising the Board of Public Works to make the company a loan of so much bank stock, as will enable them to pay off their debts, or

Second, By authorising a further and adequate subscription of the capital stock of the company, or

Third, By a combination of both.

To the first mode, the Directors would give a preference, if they can obtain a loan on such terms as loans of this kind have usually been granted to other similar institutions.

But, whichever may be adopted, the Board of Public Works will readily perceive, from the tolls herein reported, that there can be no doubt of the capacity of the company to pay, with punctuality, the interest upon the proposed loan, as well as replace the principal within a reasonable time, and as little can it be doubted, that if a subscription of stock is made, the prospect of a liberal interest is better assured, than in *most other similar institutions* in Virginia.

I am, very respectfully,

Your obedient servant,

JAMES HENDERSON, *President.*

To the Secretary of the Board
of Public Works.

POTOWMAC COMPANY.

Office of the Potowmac Company,
Georgetown, 29th November, 1826.

To J. Brown, Jr. Secretary to the Board of Public Works of the State of Virginia, Richmond.

Sir,

Herewith I beg leave to hand you, for the use of the Board of Public Works of Virginia, and in the form prescribed by your letter of the 2d October last, the information required in relation to the affairs of the Potowmac Company, as extracted from the books by their Treasurer and Clerk.

I remain, Sir,
Very respectfully,
Your obedient servant,
J. MASON, *President*
Potowmac Company.

◆

Return of the State of the Potowmac Company, 31*st July,* 1826.

Capital subscribed:		
By individuals,	$299,116 71	
By the State of Virginia,	55,994 40	
		355,111 11
Aggregate of requisitions made on stockholders,		355,111 11
Amount paid by stockholders,		336,551 10
Amount due by do.		932 20
Amount expended in the work, in repairs, in salaries and expenses, and in interest actually paid,		729,566 52
Debt due by the Company:		
Principal,	144,247 84	
Interest to this date,	54,827 84	
		199,075 68
Income during the year ending this date: Tolls,	11,505 33	
Rent,	126 00	
		11,631 33

felt, that the Company will soon afford, at every stage of tide, the necessary depth of water for admitting and accommodating the trade of this place; and recent experience has fully confirmed the expectations always entertained by the President and Directors, that with such depth and accommodation, the income of the Company will regularly and greatly increase. The President and Directors have to deplore their continued inability, for want of sufficient funds, to erect at once further works, found to be indispensable to the free use of the Dock; or to complete those already erected, and suffering from their unfinished state. Encumbered as they are with debts, they despair of being able to make, in any reasonable time, such additions and improvements from any surplus of tolls, beyond the absolutely necessary expenses, and have, therefore, petitioned the Legislature to aid them by the grant of a lottery, to raise the sum of fifty thousand dollars. If their course, in this particular, meet the concurrence of the Board of Public Works, they solicit the exertions of that body in aid of their object. Herewith is handed the Treasurer's statement. It shews an increase of $ 1285 76 in the amount of tolls that accrued from 30th Nov. 1825, to 1st Dec. 1826, over the amount that accrued during the preceding twelve months. That the Board may be better able to form an opinion of the probable future income, the amounts are designated monthly as they accrued; more than one half being on the busines of the last four months, that is, since the merchants have decided to have their goods delivered in the Dock. It may be proper to remark, that the tolls of the last four months would have amounted to considerably more, had there been any thing like the usual quantity of produce to export.

Respectfully, your ob't serv't.

J. B. HARVIE,
President Rd. D. Co.

* * *

Return of the state of the Richmond Dock Company, on the 6th day of December, 1826.

Capital subscribed,	250,000 00
Aggregate of requisitions made on stockholders,	250,000 00
Amount due by individual stockholders, as heretofore reported,	4,615 93
*Capital expended in the work,	348,913 99

---

* All expenses, of whatever description, are herein included.

Tolls received from 30th Nov. 1825, to 1st Dec. 1826.

In Dec. 1825,	$563 88	June,	732 05	
Jan. 1826,	143 43	July,	486 14	
Feb. "	385 90	Aug.	1,115 43	
Mar. "	627 98	Sept.	1,229 08	
April, "	646 23	Oct.	1,032 02	
May, "	844 58	Nov.	1,314 58	
	$3,212 00		$5,909 30	9,121 30

Officers' salaries: Superintendent, $1000; Collector of tolls, $750; Clerk and Treasurer, $500; Dock Master, $500; Lock-keeper, $250 per annum,	3,000 00
Debts due by the Company, other than the amount received on loan from the Board of Public Works,	42,210 95
Debts due to the Company, otherwise than on account of stock,	516 50

Errors excepted.

H. BAKER, *Treasurer*
of the Richmond Dock Company.

ROANOKE NAVIGATION COMPANY.

Weldon, 30th November, 1826.

Sir,

In pursuance of an order of the Board of Directors of the Roanoke Navigation Company, I herewith transmit to you their annual report to the stockholders of the said company, with accompanying documents, for the use of the Board of Public Works of the State of Virginia.

I am, very respectfully,
Your obedient servant,
A. JOYNER, *Secretary.*

To J. Brown, Jr. 2d Auditor.

Report of the President and Directors to the Stockholders in the Roanoke Navigation Company.

Our operations have been confined, during the past year, to the Dan and Staunton rivers, and to the Roanoke below the falls at Weldon. The sluicing on Dan river has been extended to Leaksville in Rockingham county, North Carolina, one hundred and fifty-two miles above Rock landing, and on the Staunton to Clark's ferry, eighty-eight miles above the same place. Besides the sluicing on Dan, an entrance dam, and three lifting locks have been erected at Danville, and a basin excavated. Below the Great Falls, all the river requiring improvement has been operated on, except about fifteen miles, in which distance there are several obstructions yet to be removed, but which, it is believed, can be gotten rid of in five or six weeks, when the proper season comes round for those operations. For more particular information on the subject of the operations, both above and below the Great Falls, we beg to refer you to the reports of the Superintendents on those subjects. We lay before you a letter from George Newton, Esq. covering the report of Col. Gratiot, of the United States' Engineers, in answer to one addressed to him by Col. Jones, requesting information on the subject of the contemplated improvements at the Dismal Swamp Canal. From this letter, it will be perceived, (no doubt with pleasure,) that there is every prospect of that canal being completed in the course of the next year. It will also be perceived, that it is not the intention of the company to widen the stone locks heretofore erected there. This circumstance is a cause of sincere regret to us, for, although these locks will admit the passage of steam boats of respectable size, yet, it is very desirable that a larger size should be provided for; and it is respectfully submitted to your consideration, whether some measure might not be adopted, by which you would have a tendency to promote this end.

For information on the expenditures of the last year, we refer you to the account and vouchers of the Superintendents: and on the state of the treasury, to the report of the Treasurer, his books and vouchers; all of which are herewith submitted.

CAD. JONES,
President.

13*th November*, 1826.

Return of the state of the Roanoke Navigation Company, on the 11th day of November, 1826.

Amount of capital stock,	387,000	00
Stock subscribed by the State of Virginia,	80,000	00
(1) Aggregate of requisitions made on stockholders,	371,520	00
(2) Amount due from stockholders,	25,986	75
Amount due by the Board of Public Works,	000	00
(3) Amount expended in the work, from its commencement,	341,283	89
Debts due by the company,	6,597	00
Debts due to the company, other than on account of stock,	1,071	82
Income during the year, ending 11th November, 1826, from tolls,	43	88
Expenditures for improvements and repairs, for same period,	16,020	24
Salary of Superintendent of upper river,	1,500	00
Salary of Superintendent of works below the Great Falls, and on the Canal,	700	00
Salary of Treasurer,	400	00
Salary of Secretary,	300	00
(4) Other expenses,	00	00
(5) Dividends declared, and when payable,	00	00
Balance of money in hand,	13,784	83

(1) Requisitions amounting to 96 per cent. have been made on the stockholders.

(2) It is estimated that of this sum, about $ 9,000 are due from insolvent stockholders.

(3) A portion of this sum has been applied to the purchase of negroes, and the company now own about fifty.

(4) The Board of Directors receive no compensation for their services, their expenses are paid, when actually engaged in the service of the company.

(5) No dividend has yet been declared, the works being unfinished and still progressing.

By order of the Board of Directors,

A. JOYNER, *Secretary.*

11*th November*, 1826.

SNICKER'S GAP TURNPIKE COMPANY.

Return of the state of the Snicker's Gap Turnpike Company, on the 8th day of April, 1826.

Capital subscribed:		
By individuals,	64,375 00	
By the State or Board of Public Works,	20,000 00	
		84,375 00
Aggregate of requisitions made on individual stockholders,		64,375 00
Amount paid by individual stockholders,		63,254 46
Amount due by the Board of Public Works,		00 00
Amount due from individual stockholders,		1,120 54
Amount expended in the work from its commencement, exclusive of funds from the Board of Public Works,		82,555 93
Debts due by the Company,		15,803 29
Debts due to the company, other than on account of stock,		00 00
Income during the year, ending the 8th April, 1826:		
From tolls,	1,505 08½	
From rents,	00 00	
From other sources,	00 00	
		1,505 08½
Expenditures during the same period, exclusive of funds from the Board of Public Works, for improvements and repairs,		1,012 45½
Officers' salaries: Treasurer's commission,		30 10
Expenses collecting tolls:		
Gate keepers' salaries, employed part of the year,		152 50
Other expenses:		
For the Board at the several meetings,	27 20	
For attorney's fees,	17 50	
For writing paper,	1 00	
		45 70

Dividend declared, and when payable,	00 00
Balance of money in hand,	767 51½

A true copy from the books of the company,

N. C. WILLIAMS, *Treasurer.*

COOL SPRING, Nov. 27th, 1826.

DEAR SIR,

Herewith I send you the annual report of the Treasurer of the Snicker's Gap Turnpike Company, which shews the state of the funds arising from tolls, exclusive of the balance on hand, paid by the Board of Public Works in the Farmers' Bank of Virginia, at Winchester, which is as follows, to wit:

Balance in Treasurer's hands from tolls, on the 8th of April last,	$690 76½	
In Merchants' bank notes, and unchartered paper,	76 75	
		767 51½
Balance of money in bank, deposited by the Board of Public Works,		3,189 22
		$3,956 73½

out of which sum, there would be due Urial Glasscock, about nine dollars, for paving road; and to James Roan, eighty dollars for building a bridge, provided the bridge stands five years without cracking.

But since that report was made, the company lost the bridge at Goose creek, by high waters, and the Directors have made a contract with Lewis Wernwag to build a new bridge in its place, which will cost 2,800 dollars, and the repairs of the road since that time, will take all the funds on hand.

I beg leave to state, that the road is now in good order, and the commissioners appointed by the county court of Loudoun, having received the road, and reported to that court according to law, will enable us to put up two gates and a half more, heretofore having only one on better than seventeen miles of road.

Your's, &c.

D. CASTLEMAN, *President*
of the Snicker's Gap Turnpike Company.

To J. Brown, Jr. 2d Auditor.

SLATE RIVER COMPANY.

Buckingham court-house, 27th November, 1826.

The Secretary of the Board of Public Works of Virginia.

Sir,

In compliance with your letter of the 2d October last, and of the duties prescribed by law, we subjoin a report of the income and expenditure of the Slate River Company, including payments made by the stockholders. The company has made such progress in the work, that the navigation of Slate river would be complete, from a point on the river opposite Buckingham court-house, to James river, if the owners of mills had, as contemplated by law, put locks in their dams across the stream, and if Tho. May had executed his contract, put into the stream three lock dams opposite Buckingham court-house. Messrs. Asbury and Thomas B. Crenshaw have sued the company with the view to procure their exemption from the erection of locks in their mill dam. The suit has been determined in favor of the company in the Superior Court of Chancery for the Richmond district, and is now pending in the Court of Appeals, at the instance of the Messrs. Crenshaws. We expect a speedy determination of this cause, which will either fix the duty upon the millers, of putting locks in their dams, or exempt them from it. The complete execution of the work, as contemplated by law, cannot, we think, require more than a further requisition of $20 per share, and we hope a much less sum will enable us to secure a most beneficial navigation into James river.

Respectfully yours,

GEORGE BOOKER, *President,*
SAM. JONES,
WILLIAM MOSELEY,
EDMUND GLOSEER,
WILLIAM LEWIS,
JOHN MORRISS,
ARTHUR MOSELEY,
WILLIAM P. MOSELEY,
ARCHIBALD AUSTIN,
Trustees.

SAM'L FORD, *Secretary.*

Return of the state of the Slate River Company, on the day of 1826.

Capital subscribed by individuals,		$13,100 00
by the State, or Board of Public Works,		6,900 00
Amount of first requisition on individual stockholders, at $20 per share,		2,620 00
Amount of second requisition on individual stockholders, at $12 per share,		1,572 00
Amount of first requisition made of the Board of Public Works, being 25 per cent. on the stock,		1,725 00
Amount due from the State, or the Board of Public Works, to equalize the State with individual stockholders,		483 00
Amount paid by individual stockholders,		3,624 00
Amount due from ditto,		568 00
Amount expended in the purchase of five negro men,	1,900 00	
And other sums expended in the work from its commencement,	3,261 03	
		5,161 03
Debts due by the Company: not ascertained,		000 00
Balance of money in hand,		187 97

SAM'L FORD, *Secretary.*

SWIFT RUN GAP TURNPIKE COMPANY.

Office of the Swift Run Gap Turnpike Company,
Fredericksburg, 4th December, 1826.

J. Brown, Jr.

Sir,

I enclose herein the Annual Report of the affairs of the Swift Run Gap Turnpike Company.

Very respectfully,

WILLIAM ALLEN, *Secretary.*

Statement of the state of the Swift Run Gap Turnpike Company, on the 4th December, 1826.

Capital subscribed,	By individuals,	$69,700	00
	" Board of Public Works,	46,000	00
	" Commonwealth of Va.	4,100	00
		119,800	00

Aggregate of requisitions made on individual stockholders,	69,700	00
Amount paid by individual stockholders,	68,689	00
Amount due from individual stockholders,	1,011	00
Amount due by the Board of Public Works,	00	00
Amount expended on the road from its commencement,	128,295	53
Debts due by the Company:		
To sundry persons for the surplus of their stock, which was sold for the instalments due thereon,	186	23
To sundry persons for negro hire the present year,	235	00
Debts due to the Company other than on account of stock,	00	00
Income during the year ending 4th Dec. 1826, from tolls,	2,411	97
Expenditures during the same period, viz:		
For improvements and repairs,	547	97
Officers' salaries, Secretary and Treasurer,	133	34
Overseer,	200	00
Expense of collecting tolls, one gate-keeper at $200 and one at $150,	350	00
All other expenses,	00	00
Dividends declared payable 15th July,	1,845	00
Balance of money on hand,	381	96

About [illegible] miles of the road is finished and in good order.

WM. ALLEN,
Secretary and Treasurer

SHEPHERDSTOWN AND SMITHFIELD TURNPIKE COMPANY.

Return of the state of the Shepherdstown and Smithfield Turnpike Company, to January 1st, 1826.

Capital subscribed by individuals,		$28,111 75
By the State, or Board of Public Works,		000 00
Aggregate of requisitions made on individual stockholders,		22,861 75
Amount paid by individual stockholders,		22,861 75
Amount due from ditto,		5,250 00
Amount due from Board of Public Works,		000 00
Amount expended in the work, from its commencement,		22,861 75
Debts due by the company,		000 00
Debts due to the company, other than on account of stock,		000 00
Income during the year ending 1st Jan. 1826, viz:		
From tolls,	$400 00	
From rents,	00 00	
From other sources,	00 00	
		400 00
Expenditures during the same period, viz:		
For improvements and repairs,	00 00	
Officers' salaries: For secretary, $15, treasurer, $8,	23 00	
One toll-gatherer,	100 00	
		123 00
Other expenses,		000 00
Dividend declared,		000 00
Balance of money in hand,		$51 33½

DANIEL BUCKLES,
Treasurer.

November 24th, 1826.

WELLSBURG AND WASHINGTON TURNPIKE COMPANY.

Return of the state of the Wellsburg and Washington Turnpike Company, on the 1st day of Nov. 1826.

Capital subscribed by individual stockholders,	$11,650 00	
Capital subscribed by Board of Public Works,	5,000 00	
		16,650 00
Aggregate of requisitions made on stockholders,		16,650 00
Amount paid by stockholders, including the amount paid by the Board of Public Works,		14,736 18
Amount due by the Board of Public Works,		000 00
Amount due by individual stockholders,		2,215 84
Capital expended in the work,		13,629 34
Officers' salaries,		928 00
All other expenses, attorney's fees, clerk's fees, sheriff's fees, &c. paid by the company,	250 24	
Deduct amount collected of defendants since,	8 44	
		241 80
Due by the company to clerk of the Board,		152 54
Cash in treasurer's hands,		89 58

☞ Road unfinished, and no tolls collected.

(Seal.) JOSIAS REEVES,
President pro tem.

WILLIAM PATTON,
Clerk of the Board.

LOWER APPOMATTOX COMPANY.

Organized January, 1825.

Capital, 400 shares, 100 dollars each,			40,000
240 shares subscribed.		24,000	
Requisitions, $ 70 per share, collected, except $180, delinquent on three shares,	16,620		
30 dollars each on 240 shares yet to be collected, and considered undoubted,	7,200		
Delinquent,	180		
		24,000	
Balance out-standing, as above, $30 per share,	7,200		
Delinquent,	180		
Expended on the river, to the 1st January, 1827,	16,500		
Cash on hand then,	120		
Not subscribed,	16,000		
			$40,000

With some small accounts not yet ascertained.

The above statement may be considered as correct.

J. GRAMMER, *Treasurer*
of the Lower Appomattox Company.

D. MACKENZIE,
President.

Jan. 1827.

TYE RIVER AND BLUE RIDGE TURNPIKE COMPANY.

In pursuance of a resolution of the Board of Directors of the Tye River and Blue Ridge Turnpike Company, accepting the terms of the act of Assembly, of 1st of March, 1826, authorising the Board of Public Works to subscribe to the capital stock of said company, &c. the following report of the condition of the company is respectfully submitted:

Amount of capital, supposed to be sufficient to complete the work, as stated in the act of incorporation,		$6,000 00
Stock subscribed by individuals, 78 shares, at $50 each,	$3,900 00	
Deduct from the same, 6 shares, not solvent,	300 00	
Making the sum paid in of the capital stock, and which was all expended in the work,	$3,600 00	
In the Spring of the year 1824, a private loan was taken by the company, at the rate of 6 per cent. per annum interest, which was also expended in the work,	2,000 00	
Making the whole amount of capital expended,		5,600 00
Leaving a balance of the capital stock, of $400, not yet applied,		$400 00

With the application of the above sum of $5,600, the road was so far completed as to authorise the President and Directors to erect two toll-gates: say about the 1st Dec. 1825; one of which gates, to wit, the one on the north side of the mountain, was farmed by the President and Directors for the term of five years, giving the person taking the same, all the toll received at the said gate, for said term; he paying the company annually, forty-five dollars, and keeping the section of five miles of the road, on which the gate is erected, in good repair. The tolls received at the gate on the south side of the mountain, for the three first quarters, amount, (agreeable to the report of the gate-keeper,) to $ 73 82, after paying himself $ 10 per quarter, the sum allowed him for keeping the gate.

Done by order of the Board,

WM. M. TATE, *President.*
ROBT. STEELE, *Secretary.*

February, 1827.

REPORTS

OF THE

PRINCIPAL ENGINEER,

OF HIS

OPERATIONS IN THE YEAR 1826.

SUMMARY REPORT.

RICHMOND, January 11th, 1827.

To the President and Directors of the Board of Public Works.

GENTLEMEN,

I have the honor to lay before you my reports on the operations of last year, with the exception of a report on the Mattapony river, and another on a survey from Lexington towards Covington; both of which depend chiefly on the calculations and platting of the field measurement, which, owing to the late period at which the operations of this year ceased, have not yet been completed. For the same reason, also, the maps which are to accompany the reports have not all been prepared; they have, however, so far progressed, as to be ready for your inspection in a few days.

I am, gentlemen,
Respectfully,
Your obedient servant,
C. CROZET, *P. E.*

ON THE IMPROVEMENTS

CONTEMPLATED BY THE

JUNCTION CANAL COMPANY.

RICHMOND, August 5th, 1826.

To the President and Directors, ex-officio, of the Board of Public Works.

GENTLEMEN,

Pursuant to a resolution of your honorable body, requiring "*The Principal Engineer to make a survey and estimate of the most practicable means of making the improvements contemplated by the Junction Canal Company, and make his report to the members ex-officio,*" I repaired to Farmville, in the early part of July, and examined as much of the contemplated connexion as was necessary to form an opinion of its practicability and expediency: and I surveyed the section which I was informed it was the intention of the company to improve at present.

The *Junction Canal* is designed to connect the Staunton to the Appomattox river, by means of the Little Roanoke, which flows into the former, and of Buffaloe river, which empties into the latter a little above Farmville. The route was surveyed in 1821, by my predecessor in office, whose report is to be found in the 3d vol. of the Proceedings of the Board of Public Works, page 26. Therein it is recommended to cut a canal along Buffaloe and Little Roanoke, reaching up on each side to very near the dividing ridge, so as to leave a portage of 2 miles 190 poles in a direct line, as represented on the map which has been deposited in your office.

In examining this route, my first enquiry was relative to the supply of water that may be obtained on either side, and by which the extent of the navigation and the length of the portage must be determined. In Ths. Moore's report, it is said: "That it will not be safe to depend on Little Roanoke for supply of a canal at any point above its junction with Buckle's branch: but that branch may be taken in by a small canal, and delivered into the Little Roanoke, a considerable distance above the present junction, as represented on the map accompanying this report." My examination of this stream gave me a different result; I ascertained, by gauging it below Morton's mill, about two miles lower than the point designated in the foregoing extract, that it only afforded 180 cubic feet of water per minute, which is not enough to feed a canal. I do not think, therefore, that the navigation could be advantageously extended higher than the point where Little Roanoke receives Spring creek, which is a short distance above Dabb's ford. For some part of the year there might be water enough to reach Morton's mill with boats, but in dry seasons they must stop below; and, consequently, to that point where the navigation would then cease, the turnpike must be extended: and the portage must therefore be longer than was contemplated.

In regard to Buffaloe river, it is said in the above quoted report: "I am also inclined to believe that Buffaloe creek cannot be relied on for supplying a canal in dry seasons, higher than Dupuy's mill; but the water may be taken from the mill race across the bed of the creek, and carried on a level line until it meets the South or Mill stone branch, and thereby considerably shorten the portage." The gauging of Buffaloe about 1½ miles below the point here designated, and after it has received the *Little Buffaloe*, was found to be about 285 cubic feet per minute, which would barely be sufficient to supply a canal with locks of small lift. It is doubtful, therefore, whether a canal could be constantly supplied above the mouth of Little Buffaloe. But, even if it could be so as high up as represented in the report, I do not think that it would be expedient to extend the navigation so far. From the end of the portage as fixed by Ths. Moore, down to the point where the water was gauged, the distance is 1½ miles, and the fall about 35 feet: a well-made canal of this length and fall, with its feeder, guard gates, &c. might cost about $ 30,000. On the other hand, the river forming a bend at the place where it was gauged, the extension of the turnpike to this point would not be over a mile, and would not cost more than $ 4,000. So great a difference between the two modes of improvement, is a positive demonstration of the expediency of the latter.

If it was possible to open a complete water communication across the dividing ridge, so as to avoid altogether the portage, and the considerable expense of transferring the produce from boats into waggons, and then again from waggons into boats, the great cost of the upper section of the canal might be incurred with propriety. But, according to the account given by Ths. Moore, a tunnel of at least one and a half mile in length would have to be opened: and, along the route I surveyed, the tunnel at the same elevation would not be less than two miles long. The expense of such a work, and of the upper sections of two canals descending from it, with a fall of about 25 feet per mile on either side, at the beginning, would not be justified by the present state of things.

From these preliminary observations, it will appear, 1st, That the navigation of the Little Roanoke must cease, and the portage begin below the mouth of Spring creek, near Dabb's ford. 2dly, That the portage, as represented on the small addition which has been attached to the map, must be extended to the nearest bend of Buffaloe river, about half a mile below the mouth of Little Buffaloe.

The length of the portage between the heads of navigation would then be about eight miles. The route was surveyed and levelled from Morton's mill across the dividing ridge, down to Buffaloe river. The survey was then continued along the meanders of this stream to its junction with the Appomattox; the improvements contemplated by the Junction Canal Company being for the present confined to this end of the line of connexion.

The following table exhibits the principal results of the survey:

LINE OF PORTAGE.

	References to the top of the ridge in feet.	*Distances in miles.*	*Angle of graduation between the successive points here designated.*
At the tail race of Morton's mill,	180	0	0
Station 26, at the base of the ridge,	80.55	3.15	1-4 degree.
Top of the ridge, near st. 37,	0	4	1 "
St. 41, descending towards Buffaloe river,	11.34	4.10	1 1-4 "
St. 43,	23.64	4.25	1 "
St. 47,	69.73	4.50	2 "
St. 50,	94.88	5.15	1-2 "
Surface of the water in Buffaloe river,	169.44	6.25	3-4 "

SURVEY OF BUFFALOE RIVER.

Surface of the water at Baker's bridge,	229.22	12.50	
Ditto Overstreet's bridge,	238.16	14.40	
Ditto Carter's mill pond, at the dam,	240.68	16	
Height of the dam, 11 feet.			
Ditto at Legrand's (Morton's) bridge,	271.95	21.10	
Ditto at the mouth of Buffaloe,	291.69	24.90	

This summary of the survey shews that the route of the turnpike does not incline to the horizon any where more than two degrees; and as this angle continues for only about a quarter of a mile, it might easily be reduced to 1½ degrees, in the construction of the road. The platting of the survey, which has been added to Thos. Moore's map, shews that the road will be very direct; it ascends up the valley of Little Roanoke, and continues on the other side down the valley of a small run through Mrs. Matthews' farm. The ground is very favorable, and good materials for a turnpike are in great abundance on the route.

As regards the navigation of the two streams, it must be observed, that, on Little Roanoke, the principal trade will be ascending, and it will be descending on Buffaloe river. This consideration establishes a difference in the improvements best suited to these two small rivers. On Little Roanoke a current would impede heavy loaded boats, and consequently the stream admits only of still water navigation; and as the banks are alluvial and very low, and the bottom generally sandy, a lock and dam improvement would be inexpedient; a lateral canal appears, therefore, to be the only practicable plan of perfecting the navigation of this river. When this canal is undertaken, it should be made near the head of navigation, with locks of not more than 4 feet lift; the supply afforded by the stream would not be sufficient for higher locks.

As to Buffaloe river, it is the intention of the company to improve immediately its bed on the plan of Willis's river; that is to say, by jetties extending from both shores towards each other, leaving between them a sluice of suitable size and construction to be closed by a gate turning round horizontal hinges: this being raised to hold up the water of the stream, is let down for the passage of boats, which are either carried down by the rush of the current; or, if ascending, must be pushed up against it, when its first impetuosity has somewhat diminished. This mode of improvement suits only rivers which afford but a small body of water, such as can flow through a sluice that may be closed by a light gate. The scarcity of water in such streams requires, that several boats should be held ready to rush at the same time through the sluices, during the temporary flood and swell produced by the water that had been accumulated while the gates were up. This system of navigation is evidently applicable only to a descending trade; and it seems to be the most expedient that can be adopted for the present on Buffaloe river, which is well calculated for it; and where it promises to be as advantageous as it has proved on Willis's river.

It does not appear that it would be prudent, at the present time, to adopt a higher grade of improvement, even if the means of executing it could be obtained. The object of the connexion of the Staunton and Appomattox, is to facilitate the trade of the counties bordering on the Staunton, Dan and Roanoke rivers, towards either Petersburg or Richmond: But an active competition may be expected to take place in the direction of Norfolk by the Dismal Swamp Canal, and until more positive indications of the tendency of the trade are given, the connexion of the Staunton and Appomattox, as regards its distant benefits and influence, must be viewed in some measure as an experiment, and should be conducted with caution. The contemplated route is certainly shorter than the line of transportation down the rivers just named; but, on the other hand, the Roanoke is susceptible of a perfect order of improvement, which, by the certainty and celerity of transportation would more than compensate the additional distance travelled. In descending the Roanoke only one change of conveyance would be necessary, and that from small boats into crafts; whereas on the route of the Junction Canal, there would be a double translation of the produce and a portage. Against the trade down the Roanoke and on the Dismal Swamp Canal, the sickliness of part of the route in the fall, is mentioned by some persons as an objection: but I should, in general, be inclined to consider the danger of sickness a very subordinate objection, wherever the certainty of profit is held forth.

So long as doubts may exist as to the efficiency of the contemplated improvement, it is prudent, I think, to consider its benefits, as confined to the adjacent country; and, in this view, to execute it upon a scale commensurate to the end. There is every reason to believe that the improvement of Buffaloe on the plan of Willis's river, would be as profitable as the experience of several years has demonstrated the latter to be; and it might be rendered still more so by opening immediately the turnpike across the dividing ridge, as far as Morton's store (a little above his mill,) where it will intersect the present road from Charlotte to Prince Edward Court-house. Much produce may then be expected to take its direction towards Buffaloe river, from the counties of Charlotte, Halifax, and probably part of Campbell and Pittsylvania. The effect of these improvements, namely, the turnpike and the meliorated navigation of Buffaloe river, will soon determine whether it would be expedient to extend the line by a canal down Little Roanoke.

Until the navigation of Little Roanoke is improved, it does not appear that any thing more than a good common road would be wanted on the intended route of the portage: The advantages of a turnpike would not now be commensurate to its expense; since, in order to reach it, waggons would have to travel over much worse roads. I would, therefore, recommend for the present, to graduate and shape properly a road 30 feet wide on the track of the contemplated turnpike from Morton's store to Buffaloe river, as described above and represented on the small additional map. This road would answer every useful purpose at present; and might be capped with stones at any time hereafter, when the increase of trade and the consequent improvement of Little Roanoke would render it advisable. Such a road could be made perfect for $ 700 a mile.

The distance from the head of navigation on Buffaloe river, to its mouth would be 18¾ miles, following the meanders of the river: the fall in this distance is 122.25-100 feet, 11 of which are overcome by Carter's mill dam, which will require a short canal to be cut on the east side of the river, and two locks to be constructed. The rest is to be improved by jetties and falling gates, as above stated; occasional straight cuts must also be made where short bends occur: several such straightenings have already been made by the owners of land along the river: one of these cuts is as much as ¾ of a mile in length. The width of the river is variable, but as regards the sites of dams which may be selected, it may be averaged at 40 feet from bank to bank; it was found to discharge, as before mentioned, about 285 cubic feet of water per minute at the point recommended here to be the head of navigation: at Baker's bridge it afforded nearly 370 cubic feet. This quantity increases considerably towards the mouth of the stream, but could not be measured on account of a swell in one of the tributary branches.

The estimate of the improvement here recommended, has been predicated upon the data furnished by the survey, and will stand as follows:

For six miles of road at $ 700,	$ 4,200 00
For short cuts and clearing of obstructions,	1,300 00
Canal at Carter's mill,	800 00
Two wooden locks of 11 feet lift together at the same,	2,000 00
For 111 feet fall overcome by jetties and falling gates at $ 50 per foot,	5,550 00
Total amount,	$ 13,850 00
For contingencies, superintendence, &c. 20 per cent.	2,770 00
Probable cost of the improvement,	$ 16,620 00

The difference between the transportation by land on the present roads to Farmville, and that by the improved navigation of Buffaloe, would, I think, be sufficient to authorise the company's raising such tolls as would produce on the article of tobacco alone more than ten per cent. on this capital, and thereby pay a reasonable dividend as well as keep the work in repair.

I have the honor to be,

Gentlemen,

Your most obedient servant,

C. CROZET, *P. E.*

REPORT

ON THE

EXAMINATION OF THE DISMAL SWAMP CANAL.

A complete description of this work, and of the state it was in when my predecessor Ths. Moore viewed it, has been given by him in a report made in December, 1820, and to which I beg to refer for such information as I could not convey here without useless repetition.

The canal extends from Deep creek, on the southern branch of Elizabeth river, and about ten miles from Norfolk, to Joyce's creek, at the head of Pasquotank river. It thus forms a complete water communication between Albemarle Sound and Hampton Roads.

It is fed from Lake Drummond by a cut of 3¼ miles in length, 2½ feet deep, and about 12 feet wide. The fall of this feeder had heretofore been represented to be 7 feet; but from a recent survey made by the U. S Engineers, it was found to be only 4.70 feet. This fall, however, is still too considerable, and it may be apprehended that in the course of time the feeder may enlarge itself by abrasion: this effect is, it seems, already indicated by a quantity of sand which is deposited in the canal at the mouth of the feeder. The best remedy to this is, I think, to keep it within proper limits by paving its sides and bottom: The paving need not be executed all along, but only in places at suitable distances from each other.

The canal is at present 22 miles and 200 yards in length; its fall from the dividing summit to tide water is stated at 17 feet, which at the north end are overcome by two connected locks of stone. Owing to the diminution of depth which has taken place in Joyce's creek since the first opening of the canal, it has become necessary to extend it about half a mile across a bend of this creek and through a difficult swamp. The probable cost of this extension has been estimated at $ 20,000. This amount will not surprise those who are acquainted with the nature of the swamps the canal traverses: besides the known difficulty of digging in water, roots and swamps have to be contended with at every step, and it is therefore only at an enormous expense that such an excavation can be carried through, owing to these circumstances. The Dismal Swamp Canal has cost a great deal more than persons unacquainted with its localities would be led to suppose from its dimensions and fall.

The canal was originally intended to afford five feet of water; but it is thought that it should be seven feet deep for the passage of crafts carrying 6 or 700 barrels, competent to navigate Albemarle Sound and the Chesapeake. The new locks have accordingly been made with a depth of water of seven feet over their sills: the canal will receive the same depth. When I visited this improvement last spring, it was stated to me that the depth was then

4 feet for 2½ miles,
5 feet for 4 miles,
6 feet for 12 miles, and
7 feet for 4 miles.

The width is no where less than 38 feet, and in places it is as much as 100 feet.

The locks were in the first instance made of timber; and indeed it would have been impossible then to transport stone to the lock-sites for the purpose of making them of this material. The substitution of stone locks instead of wooden ones has been progressing for several years past.

The two connected locks at the northern end let the canal into Deep creek. They are 96½ feet long and 18 feet wide with a floor of jointed timbers one foot square and 37 feet long. The walls are made of masonry. They average 5½ feet in thickness and rest upon a basement of timber raised on the floor within about 2 feet of the lower water line in the lock. This construction is economical; but I apprehend that the walls are rather thin; those of the upper lock leak much, which indicates a deficiency of hydraulic lime, a defect unfortunately too common in works of this kind; otherwise, the workmanship is good: the gates, especially, are made and hung with a great degree of perfection. The locks are filled by culverts, which I think rather too large: a frame of timber placed over their outlet so as to receive the shock of the water and compel it to escape underneath, would, I conceive, be a cheap and useful addition The great agitation of the water, in the lower level especially, would thereby be prevented.

It is to be regretted, that these locks have been connected: the loss of time and water incident to such a plan may become a great inconvenience when the trade shall have attained the degree of activity which every probability authorises to anticipate. I have, however, understood since, that Deep creek, like Joyce's creek, has filled considerably below the out-fall of the canal, and that it is contemplated to construct a new lock lower down; this would obviate the inconvenience just mentioned. The gradual filling of creeks and rivers near the head of tide water, is a circumstance complained of almost every where, and to which due attention should be given in framing new improvements in such localities.

There is yet on the northern section an old wooden lock, which is used for the present to overcome 2 feet of elevation: it is to be removed.

On the southern section there will be three stone locks: one of them of 5 feet lift is already built; it is about 3 miles from the present southern outlet. The pit of another lock was excavated and the foundation laid: it will overcome 4½ feet. The last lock at the out-fall of the canal into Joyce's creek is not yet begun; it will have a fall of 7½ feet. Two old wooden locks are now temporarily used on this section. The single stone locks are of the same dimensions as the double one at Deep creek, with the exception of the walls which average only 4 feet thick with buttresses 3 feet square and 18 feet from centre to centre: the outlet walls are 25 feet long and wing walls 15 feet. If it was possible to bring the lifts of the new locks nearer to an equality, I should deem it an advantage; it being generally expedient that the locks should diminish in lift as they recede from the feeder; whereas, here the contrary happens.

Of the importance of this canal both in a military and commercial point of view, I could say little more than has already been published. Ths. Moore, in his report has enlarged upon this subject, and the improvement itself has since been the object of a share of public attention and patronage, which afford the best practical illustration of the opinion generally held of its utility. It promises, when brought to perfection, which it may now be hoped will soon be effected, to re-pay largely for the expense of its construction, both in the way of tolls and by the facilities it will procure to the trade of an extensive country. The improvements now in progress on the Roanoke will considerably extend the sources of its support and the range of its benefits.

A cut is also contemplated from the canal to the north west river, a distance of about 5 miles: the estimate made for this lateral improvement is $ 50,000.

It has likewise appeared to me, that a connexion between this canal and the Chowan river, either through lake Drummond, or otherwise, might benefit both the canal, and the country bordering on the rivers which unite in the Chowan river. The ground, as far as I am acquainted with it, seems favorable to such a work; it is easy of excavation, and abounds in springs, at an elevation much superior to that of lake Drummond; and, therefore, promises an ample supply of water. Such a canal would save a considerable distance, and avoid the navigation of the Sound, and the transhipping of produce.

REPORT

ON THE

SURVEY BETWEEN NANSEMOND AND BLACKWATER RIVERS.

Pursuant to an order of the 4th day of February, 1823, "requiring a survey to be made between Nansemond river, and Blackwater river, and Summerton creek, in order to connect the two rivers by a canal," I surveyed the intermediate country in the spring of the last year.

From this operation, the following facts were elicited: The dividing summit between the two waters is wide and flat; its highest point is very nearly 83 feet above tide water. Although this intervening ground is very swampy in the wet season of the year, the disappearance of the water takes place in the upper part of it early in the spring, and, in May, when the survey was made, all the sources united would have been far from adequate to the feeding of a canal. At the elevation where a supply could be obtained, a cut of about 35 feet in depth, and at least three miles in length would be required, together with the assistance of ample reservoirs, to collect and retain part of the water which inundates the swamp during the winter. The construction of such a cut and reservoirs would occasion an expense quite disproportionate to the benefits held forth by the scheme.

A canal between Blackwater and Nansemond river, besides avoiding the navigation of Albemarle Sound, would lessen the distance to which the produce must now be transported before it can be shipped: but the difficulties attending this project would be too considerable, I think, to justify it, especially if it be considered that this canal would run very near the Dismal Swamp Canal, and that it is always injudicious to construct two improvements which may compete for the same object; a concentration of improvements is certainly a much more advisable policy. In addition to these considerations, if this water connexion was open, it would very likely be rendered unprofitable by the making of the canal mentioned in the preceding report, from Bennet's creek to lake Drummond, or some other point of the Dismal Swamp Canal, which would immediately divert the trade to Norfolk, where capital would undoubtedly invite it.

REPORT

ON THE

SURVEY OF HARRISON'S BAR.

This bar is situated across James river, just opposite Harrison's Point at Berkeley, five miles below City Point, and about half way between Jordan's and Coggin's Points. It is said to be the only obstruction to the navigation for merchant ships up to Warwick. I surveyed the bar during the month of May; a map of the survey is herewith laid before you; it exhibits the soundings and the nature of the bottom, over the whole space where the shoals exist.

There are through the bar two channels, one of which is known by the name of *old* or *south channel*, the other of *new* or *north channel*. The shoal between them is called *the middle ground*, and is, as may be observed on the map, remarkably shallow.

The south channel, I was told, was formerly chiefly used; it is very crooked, but deep enough for any merchant ship; its bottom is a soft mud, into which the lead sunk deep. Whatever may have been the cause of the formation of this narrow and deep channel, it is remarkable, that its edges are excessively abrupt, so that a ship may be wrecked without a previous notice from the lead, if it deviate slightly from the main course. It is represented by some, and appearances seem to indicate, that this chasm is gradually filling, while the north channel, on the contrary, is deepening. This seems particularly probable, from the nature of their bottoms; that of the south channel being a soft black mud, to a considerable depth; whereas, the bottom of the north channel, at its shallowest place, is clean gravel, from which it is natural to infer that the power of the tide is all exerted upon this point, where no light substance is allowed to remain.

The north channel is now almost exclusively used; it has been represented that ships drawing more than 15 feet of water could not pass through it over the bar; but, by the survey I made last year, I have ascertained that the least depth of water in the north channel, is, at the lowest ebb, 16½ feet, and that but for a short distance; so that the tide rising, as found by measurement, at least 2.20 feet at this place, a ship drawing 18 feet might pass over the bar at high water. The channel, however, being irregular and very narrow at the shallowest point, a slight deviation from the course might throw a vessel, drawing more than 15 feet of water, on shoals.

Whether it is owing to this circumstance, that the bar is represented as affording only 15 feet of water, or that the channel has actually deepened, I could not determine with certainty; my enquiries on this subject having received contradictory answers. I rather incline, however, to the latter opinion; 1st, because of the coarseness of the materials which constitute the bottom at the shallowest place, which indicate that light ones are washed away; 2d, because this place is very narrow, whereas shallow places are most commonly wide; 3d, because the bottom is irregular and interspersed with lumps, from which it may be inferred that the corrosion of the current is still going on; 4th, because other changes, according to all accounts, have been remarked here in the main channel, it being generally said, that vessels do now bear nearer to Coggin's Point than they were wont to do.

Though the fact that large ships may pass over the bar, is not generally admitted, it was, nevertheless, mentioned to me before the examination took place, by some gentlemen acquainted with the localities; however, the passage of vessels deeply loaded cannot be attempted at all times without danger; but, if the channel was marked out by proper buoys, I am confident that, with suitable precautions, deep laden ships might, by keeping exactly the middle of the channel, pass at high water over the short space where the danger exists, which is hardly 200 yards. The vessels would only have to wait for the tide, and then, if the wind proved adverse, it would be a very easy matter to haul or tow them up over this small distance. Four buoys would, I think, be sufficient, viz: two where the vessel must alter her course, and the two others on each side of the narrow pass just at the bar. The cost of these buoys would be trifling, and their service very great.

For the purpose of procuring at all times a safe navigation for large vessels, it would be necessary to straighten the channel, and excavate it to a depth of 17½ feet, and a width of at least 200 yards. Ships of any size might then sail up and down at mid tide, with perfect security, the tide rising, as already stated, at least 2.20 feet. The expense of this excavation, as the results from my calculations, would be about 21,000 dollars.

This work would probably be permanent, there being every appearance that the channel, if not actually deepening, has a tendency to do so; since the soundings indicate that only light materials are brought by the river; and that, as previously stated, they cannot stop at the bar: But, it may be doubted whether so considerable an expense would be compensated by the advantage obtained of experiencing no delay or difficulty in passing over this obstacle.

REPORT

ON THE

SURVEY OF THE RIVANNA RIVER.

I surveyed this river during the month of July, after the great freshet which caused so much damage to the crops along the valley of James river and its tributaries. The Rivanna had formerly been surveyed by Ths. Moore, who also included 4½ miles of the North Fork up to the Rivanna mills, and found the fall in this distance, 19½ feet.

This fork I did not think necessary to measure anew; but commenced on the South Fork at Perry's mill. The results obtained are as follow:

	Distance in miles.	*Fall in feet.*
From the mouth of Ivy creek, just below Perry's mill, to the fork,	5⅓	33.56
Thence to Moore's ford, opposite Charlottesville,	3½	7.21
" to Secretary's ford, head of Shadwell mill-pond,	2	10.81
" to the tale of Shadwell mills,	2¼	20.83
" to Milton,	1 1-8	10.61
" to Campbell's dam,	4 7-8	4.06
" to Union dam,	3⅓	9.45
" to the mill tail at do.	0	12.81
" to below Bernardsburg,	1 7-8	8.23
" to Palmyra dam,	6⅓	7.11
" to mill-tail of do.	0	10.83
" to Stillman's (Ashlin's) dam,	10	15.89
" to the lower point of the wheel,	0	7.96
" to Wood's dam,	3¼	3.48
" to mill-tail of do.	0	5.44
" to Columbia, at the mouth of the river,	1½	0.28
Totals,	45 3-8m.	168.56 ft.

It is proper to remark, that James river was not at its lowest; so that in a very dry season, the whole fall of the Rivanna would be somewhat greater.

The three lower dams were undergoing repairs, which caused a slight difference in the level of the Palmyra and Stillman's ponds; but made a much greater difference in that of Wood's mill, which is said to rise within ten inches of Stillman's wheel, when at its proper height; from which it would appear that its elevation above the mill tail would then be 8.10 feet instead of 5.44.

The two forks of the Rivanna are much alike: they afford too little water, and their fall is too considerable for a sluice navigation of any importance. They have, however, both been improved a few miles up by sluices. It does not appear that, for the present, there would be much inducement to adopt a higher order of improvement; though they are, I think, well calculated for the plan executed on Willis's river. Below the fork, the body of water is too considerable for this style of improvement, which suits only rivers with a limited body of water and fall.

The sluices on the South Fork do not extend higher than the mouth of Ivy creek, on which Perry's mill is located. The freshet of last June rose about 21 feet, and within six inches of the highest that happened during the last 20 years; it injured several dams, and has filled most of the sluices on the South Fork with gravel and sand; though it is said that ordinary freshets of 5 or 6 feet have a tendency to keep them open. This demonstrates the uncertainty of a sluice improvement, which, while it may be suited to a certain stage of the river, is liable to be obstructed by extraordinary freshets.

As regards the main river, below the fork, it does not appear that any considerable advantage would be realized, for the present, by meliorating its navigation above Moore's ford, opposite Charlottesville: I have, therefore, considered the improvement only from this point down to the mouth of the river at Columbia. The distance from Moore's ford to Columbia, is 37 miles.

The system of improvement which I think most eligible on this river, is that by locks and dams, adapted to the use of light steam-boats. Here, however, this mode of navigation will be liable to more interruptions than on James river, there being occasionally a scarcity of water during the dry season. On this account, it will be expedient to make the locks of as small lifts as possible.

The fall of the Rivanna being per mile nearly the same as that of James river between Richmond and Lynchburg, viz: about 3½ feet, the expense of transportation by steam would be about the same, that is, $1 32 per ton for 120 miles, or about on an average 41 cents from Columbia to Charlottesville: and, if James river was improved on the same plan, probably 110 cents from Richmond. For farther particulars on this subject, I beg to refer to my report on James river.

Though the Rivanna is narrow, it will appear from the estimate below, that the probable cost of the improvement will be much greater in proportion to its width than might at first be supposed. This is owing to the obstacle presented by the mill-dams that have been constructed across it. It might, at the first view of the subject, be supposed that the ponds formed by mill-dams are so much done towards improving the navigation of the river; but, though these ponds afford good navigation, they shackle the improvement, and very frequently reduce it to be the least unfavorable choice between plans which would otherwise have been rejected. This is particularly the case in passing from a mill-pond to the river below it.

A dam raised for the purpose of obtaining water power, is always located at the very head of a fall, so that immediately at its base there is seldom sufficient depth of water to lock into: but, on the other hand, in order to secure as much head as possible, the mill is most commonly built at the lowest point of the fall, and, consequently, if there be not naturally depth enough for navigation just below it, an artificial depth cannot be obtained by raising a dam below without drowning the wheel of the mill. It is, therefore, generally indispensable not only to cut a canal round one of the abutments, but also very frequently to carry it a considerable distance further down to obtain the requisite depth; for, it usually happens, that the fall of a river is slight below such mill sites, and yet it is only after having gained sufficient fall that an artificial depth can be produced by a dam.

The canals, thus rendered indispensable by the location of mills, are generally expensive on account of the great depth of cutting incident to them; and in many instances, they may even cost more than the value of the mill itself. I have premised these general observations, in order to avoid repetitions in the remarks that each mill-dam will suggest; it will be perceived that they apply more or less to the different mills on this river.

The Shadwell mill is the first below Charlottesville; its dam backs the water up to the mouth of Moore's creek, above *Secretary's ford*, where the main road crosses the Rivanna.

Just above the mouth of *Moore's creek*, there are several ledges across the river, which offer a choice of sites for dams: the lower one appears most eligible. This dam should be 5 feet high. On another ledge above a dam raised also to a height of 5 feet would back the water up to Moore's ford.

For two dams 70 yards long and 5 feet high, 2,000 00

A lock should be made through each dam: but in order to give a sufficient depth of water in the lock in the lower one, it will be necessary to raise Jefferson's dam 2 feet.

For raising the Shadwell mill dam 2 feet, 350 00

By thus raising the dam the water will be made 3½ feet deep at the mouth of Moore's creek where it is now only 15 inches: but it will destroy Secretary's ford. The present plan is proposed, because it is understood that a bridge will be built on one of the ledges above Moore's creek, whereby the ford will be rendered unnecessary.

From Jefferson's dam to the still water below the mill, the distance is about one mile and the fall 21.68 feet which may be overcome in two different ways: either by extending and widening the mill race and constructing locks at its lower end, or by erecting three new dams below that of the mill, for which there are favorable ledges and lock sites. The widening of the race would be the most expensive plan; it would probably cost, including guard gates and paving, $ 9,000.

The three dams by which the fall would be overcome will be about 5 feet high each and cost together, 4,000 00

The water below the Shadwell mill wheel should be raised about two feet to increase the depth; this can be done without interfering with the wheel, which besides may be raised as much as the dam.

The next obstacle is presented by the falls at *Milton*, the upper ledge of which rises from 2 to

Amount carried forward, $ 6,350 00

Amount brought forward,	$6,350 00

4 feet above the surface of the river; and would only require filling up a few crevices to be converted into a tight dam, which would back up the water to the last lock at Shadwell mill.

For making a dam at this ledge,	250 00
For taking off some points of rocks in the pond below Shadwell mill,	50 00

The whole fall from the upper ledge to where the water is level below Milton is 10½ feet: a succession of dams here would be objectionable on several accounts: it will be better to cut a canal round the falls on the side of Milton.

For a canal 40 feet wide, 800 yards long, averaging 10 feet depth of cutting: including guard-gates, paving and road bridge,	8,500 00

From the end of this canal to Campbell's pond the fall is 3.20 feet; at the head of the pond there is a ledge over which the water is 2 feet deep; there a dam should be raised to a height of 7 feet from the bottom, in order to afford sufficient depth at the outlet of the canal above where it is now only 1½ feet.

For a dam 60 yards long and 7 feet high,	1,550 00

To pass *Campbell's dam* is one of the main difficulties of this improvement. The fall from it to the head of the Union mill-pond, is only as stated above, 9.45 feet. So that there is no possibility of raising the Union dam without interfering with Campbell's mill wheel, which is only 1.42 feet above its level: and yet the water at the head of the Union mill-pond is only 9 inches deep in places. There is consequently no other way of passing from one level to the other than by cutting an expensive canal round the left abutment of Campbell's dam. This canal will necessarily be 2350 yards in length before reaching a sufficiently deep place to lock into.

As to Campbell's dam, it appears to have been raised as high as possible; and that even some contention has arisen in consequence of it.

The canal would require an average depth of cutting of 12 feet, and even supposing it to be cut

Amount carried forward,	$16,700 00

Amount brought forward, $16,700 00

through good ground, would cost including gates and paving, no less a sum than $ 30,000.

This enormous expense to turn a single dam can only be avoided by an arrangement with the owner of the mill, which may either be entirely abandoned by him, or else might, as well as the dam, be removed to the point where the Union mill-pond is deep enough for navigation, and where the above canal would otherwise terminate.

This new dam might cost 4,000 00

As to the compensation to be allowed for the change in the site of the mill, I cannot undertake to form an estimate.

The *Union mill* is supplied by a race taken out of the pond. This race is no where less than 4 feet deep; its width is at least 35 feet, except near the mill where it is only 20 feet. At the time of the survey, they were digging some distance below the mill, the foundations of a cotton factory, to which the race will of course be extended; what its dimensions will be, I have not understood. The whole race will require but little labor to be adapted to the purposes of navigation.

From the top of the dam to the mill tail the difference of level is 12.81 feet; the wheel itself stands 2 feet above the water, which forms a level sheet from 4 to 5 feet deep as far as *Mechunck's creek*. Below this point the water begins to take a fall and becomes gradually more shallow, until, about 600 yards below the creek, a ledge is formed, over which the water is too shallow. It will be necessary to cut a channel 1½ feet through it for 160 yards, there being no possibility of raising the water over it without injuring the mill wheel.

Probable expense of extending, enlarging and strengthening the mill race, with gates, &c. 3,000 00

For paving about 100 yards of the river bank which is considerably abraded below the dam on the side of the canal, 350 00

Amount carried forward, $24,050 00

Amount brought forward,	$24,050 00
For blasting out a channel through the ledge below the mill,	1,050 00
For a dam of 6 feet lift and 75 yards long nearly opposite *Bernardsburg*, which will raise the water only about 2½ inches above its level at the Union mill,	1,500 00
For a dam 8 feet high from the bottom and 60 yards long on a ledge at the head of the Palmyra mill pond, (this dam will throw 2 feet more of water over the end of the lock in the preceding one,)	2,150 00
For cutting off a few points of rock,	10 00

The dam of the *Palmyra mill* had been much injured by the last freshet: another was building below, in the body of which were incorporated the piers of a toll bridge to be raised 13½ feet above the dam itself. This plan when well executed presents many advantages.

The race of the mill is narrow and along a bluff; it would be almost impossible to adapt it to the use of the navigation. A canal must be cut round the right abutment and extended down to the mouth of *Cunningham's creek.*

For a canal 890 yards long, averaging 11½ feet depth of cutting, with gates, paving and road bridge in continuation of the bridge over the river,	10,500 00

Below Cunningham's creek there is in places only 9 inches depth of water. A dam should be built about 1½ mile below the creek on a ledge whose level is 2.88 feet lower than the mouth of the creek: a dam 5 feet high at this site will raise the water 2.12 feet at the creek and make it level with the sheet immediately under the mill wheel. The same dam will make the ford opposite *Fluvanna C. H.* three feet deep.

For a dam 5 feet high and 80 yards long,	1,250 00
For taking off some high points of rock,	10 00
For a dam of 6¼ feet lift, (7¼ from bottom) and 100 yards in length to raise the water 1½ feet higher below the preceding one,	2,800 00
Amount carried forward,	$43,320 00

Amount brought forward,	$43,320 00
For blasting off some points of rock,	20 00

The water is deep just below this last site, but, about half a mile lower down, it is only 4 inches deep: it will therefore be necessary to raise the next one high enough to furnish a sufficient depth. This should be at the *white rock* just at the head of *Stillman's pond.* The fall to that point is 5.82 feet; and a dam 8 feet high will answer the intended purpose, there being 6 inches fall between the last dam and the shallow place, which is at *Carey's lower island.*

For a dam 8 feet high and 60 yards long,	2,150 00

The water in *Stillman's* pond is 5 feet deep immediately below this site.

The easiest plan to pass from Stillman's pond to Wood's is to raise both about 2 feet.

For raising Stillman's and Wood's dams,	800 00
For enlarging Stillman's race, &c.	2,000 00
For blasting off some points of rock near the head of Wood's pond,	50 00
For enlarging *Wood's mill* race, &c.	2,100 00
For blasting off some points of rock between it and Columbia,	60 00
For a dam of 2½ feet lift a little above *Columbia,* in order to afford depth enough below Wood's dam,	1,200 00

The improvement from Stillman's mill to Columbia must necessarily depend on that of James river. If the canal should be extended up to Columbia, it should be met by a cut taken from Stillman's mill pond, which might then be considered as part of the James river improvement.

If the James river were improved by dams and locks, the last dam and lock above Columbia would probably be rendered unnecessary by the erection of one across James river and below Columbia.

As to the locks, their cost may vary considerably according to the mode of execution adopted for them. It appears to me that locks of rough masonry lined with plank are the most ex-

Amount carried forward,	$51,700 00

Amount brought forward,	$51,700 00
pedient plan to conciliate as far as practicable the end with the means: such locks, of 14 feet width, would probably cost upon an average $500 a foot lift. The fall from Moore's ford to Columbia being 127 feet, the estimate will be, For 127 feet of lockage,	63,500 00
Total amount,	$115,200 00
For superintendence, contingencies, &c. 15 per cent.	17,300 00
Probable cost of the improvement,	$132,500 00

A map has been prepared from the survey: it exhibits on the plan and profile all the prominent circumstances relative to the Rivanna.

REPORT

ON THE

LOCATION OF THE ROAD FROM STAUNTON TO RIFFLE'S RUN.

◆

Preparatory surveys and examinations relative to this object were made in 1823. By an Act of Assembly of the 5th of March, 1824, certain sums of money were appropriated for each county traversed by the road for the purpose of making it; it being provided, however, "that each of the said counties should raise a sum equal to the amount appropriated to such county for the opening of said road."

By a subsequent amendment to this act, in date of the 13th February, 1826, it was directed, "that the several sums of money having been raised, the said road shall be laid out and made agreeable to the location of the Engineer, from the town of Staunton to the mouth of Riffle's run, in Randolph county." From this point to Parkersburg the location was left to three

Commissioners appointed by the Courts of Randolph, Lewis, and Wood counties.

In compliance with this law, the Commissioners between Staunton and Riffle's run, applied for the completion of the location, and, under an order of the members ex-officio of your honorable Board, I repaired to Staunton in August for the purpose of attending to this duty.

The road from Staunton to the Shenandoah mountain being now tolerably good, and there being, besides, no provision made in Augusta county for its improvement, it appeared unnecessary to attend to this section of the road; I therefore began the location at the Shenandoah or Calf Pasture mountain. This mountain is so steep and broken, its spurs are so short that, after a minute examination of all the practicable routes, it was found impossible to ascend it on the eastern side without making two turns on the face of it; and, even with these, it was necessary to make the grade as much as 6° for 44 poles. The mountain is crossed a little to the north of the old road.

On the west side the descent was more favorable, but required also a graduation at 6° for 39 poles. The new road increases the distance over the mountain a little upwards of a mile.

From the foot of the Shenandoah mountain to Shaw's ridge, crossing Shaw's fork, the old road, though susceptible of improvement, has been preserved for considerations of economy.

Shaw's ridge is crossed at the same place as before; but its graduation has been reduced to 5° which adds 88 poles to the road. At the foot of this ridge, the road crosses the Cow Pasture river.

The Bull Pasture mountain is crossed at the same place as before; but the graduation is reduced to generally less than 5°. The new road is shorter than the old one.

At the base of the Bull Pasture mountain, the road crosses the river which bears the same name, and then continues up the Crab run, along which it deviates considerably from the direct course; but from the examination I made of a low place in Jackson's mountain, I am convinced that, though devious, the road which passes along the Crab run, round the end of Jackson's mountain, is shorter than a well graduated road would be right over the same; and it can certainly be made good at a much less expense. 2½ miles were located on a better route: The other 4 miles along the Crab run were retained, though very rough in places; but the funds would not allow of attending to mere improvements, so long as the main difficulties have not been overcome.

Passing over a depression at the end of Jackson's mountain, the road descends along its western declivity into the valley of Straight creek, which it crosses very near the dividing ridge between the waters of Jackson's river and the Potomac.

Straight creek mountain is a high and sharp ridge, and extends but a few miles to the north and south of the route. It became, therefore, a subject of investigation, whether it would not be proper to go round its southern extremity; but, from the measurement taken for this purpose, it appears, that probably 4 miles will be saved by passing over the mountain, and that the road will otherwise be better. It was therefore located up it, at an angle of 4½ degrees, and down its western face at an angle of 5°. Its base on that side, rests on the dividing ridge between Jackson's river and the head waters of the Potomac; and, pursuing this ridge, it reaches Back Creek mountain, which it ascends at an easy grade. By thus keeping on the dividing ridges, good ground is obtained, the ascent of the main mountains is diminished, and consequently, also the length of the road.

Having located in Pendleton more than the sum of 1200 dollars appropriated to this county could effect, I removed the operations to Greenbrier and Cheat mountains. There they were excessively laborious: It being impossible, in some places, even to explore without cutting the way through thick and dark laurels. After having examined very minutely a few miles above and below the existing road, and tried several routes, it was ascertained that there was no better track, and that all that could be done was to improve the graduation of the road, which was accordingly effected at an angle seldom as much as five degrees. Here what was located, is also more than can be made with the funds appropriated, which in Pocahontas, are 400 dollars, and in Randolph, 1600.

A few miles, extending from Back Creek mountain across the Alleghany, remain still to be located. The time, which I could dispose of, being rather short, and it being uncertain when new funds would be raised, it did not appear expedient to perform this part of the location, especially as it is attended with much difficulty near this point of the Alleghany, where the waters of James river, Greenbrier, and the Potomac head within a distance of 3 or 4 miles; so that the country is excessively broken and intersected in every direction by numerous steep ridges, which render it very difficult to ascertain the most eligible track for a road, especially through such a perfect wilderness. The whole distance located, is 45 miles.

The road on the west side of the Shenandoah mountain, two miles in length, has already been made: It cost at the rate of about 260 dollars per mile: The ground is in places rocky, the hill is steep, and the road ten feet wide.

I have understood that a subscription had been raised in Augusta for making the road on the eastern side of the same mountain. What else has been done in Pendleton county, I have not been officially informed of; but I have understood from private sources, that the road across Straight Creek mountain, had been contracted for, at a lower price than the Shenandoah mountain, and that the work had begun.

The funds in Pocahontas, have been applied to the making of the worst part of the road up Greenbrier mountain. The contract where it is most rocky, is $ 1 47 a rod.

From the top of Greenbrier mountain to the western base of Cheat mountain, the distance is a little over 8¾ miles. The ground is too bad to allow of much being done with the money appropriated. The Commissioners could only contract for cutting and grubbing the timber, on a width of 30 feet, where no digging will be required; and 23 where the road is to be cut out of a hill side. This work was contracted for at $ 545 for the whole distance of 8¾ miles.

These prices show how cheap a road can be made through the western part of the State; particularly if it be reduced to the width of 10 or 12 feet. This width is quite sufficient for roads through a new country; the disposition and means for widening them afterwards, will naturally result from their benefits: The main point is to locate them well in the first instance. It too frequently happens, that great exertions and sacrifices are made to open roads which afterwards prove so bad, that they must be abandoned, and the same expense incurred again for a new one; the country in the mean time remaining in its unimproved state for a much greater period.

This has been the case over the Shenandoah mountain, where the old road cost just as much as the new one, and yet had become impassable. It has also happened in Pocahontas on Greenbrier mountain, where a road was made at the very time of my survey in 1823, and yet more anxiety was perhaps evinced last summer to have it changed, than was shewn in the first instance to have it opened.

A glance at the Map of Virginia will shew the advantages of the direction of this road. It comes in continuation of the road from Richmond to Staunton, in a direct course towards Columbus in the State of Ohio; and there can be no doubt that, when completed, it will be a very important thorough fare: It has the advantage of heading the principal waters of Virginia, and, besides, it crosses Cheat mountain at the most favorable point, within a very considerable distance; so that, if it was properly made over this mountain, it would be almost exclusively travelled from the north-western counties of Virginia: and, indeed, bad as it now is, it is much used. For great part of the distance between the tops of Greenbrier and Cheat mountains, horses in the dryest seasons sink above their knees in the mud: I nevertheless think, that a good road might be made over this ground. The top of the soil appears to be a compact clay resting on a bed of gravel; so that the water which falls on the road in rains, or is supplied by the springs which abound in this mountain, cannot escape otherwise than by evaporation. It stands therefore on the road, and is incorporated into the clay by the trampling of horses, which keeps it in a state of perfect puddle: This effect is favored by the number of roots and stones which are mixed with it.

All that would be requisite to make this road dry, is, I think, to cut on the upper side a ditch through the stratum of clay, down to the gravel. The materials proceeding from this ditch being thrown over the road, would raise it above the adjacent ground, out of the reach of the springs, and the last coat being gravel, the top of the road would be tolerably firm. The ditch would cut off the communication between the bed of the road and the springs; all the water would collect in this ditch, and it would only be necessary to provide frequent culverts, to get rid very effectually of the water which now renders this road very muddy, and at times almost impassable.

It is, however, proper to observe that, upon this plan, the road is not susceptible as elsewhere of being made narrow at first, to be enlarged afterwards: it must at once receive its full proportions. This would occasion a present expense beyond the means which could probably be obtained in that thinly settled country: There does not appear, therefore, to be any other way to make this important section, which is like the key of the whole road, than to convert it into a toll-road over the six miles between Greenbrier and Cheat mountains. These six miles, after what has already been done, could probably be constructed for $3,600, upon which it does not appear doubtful that a good dividend might be obtained.

It would require, to complete the road from the Shenandoah mountain to Riffle's run:

In Pendleton,	$5,000
In Pocahontas,	2,500
Between Greenbrier and Cheat mountains,	3,600
From Cheat mountain to Riffle's run,	1,100
Total,	$12,200

I will now conclude this report by a statement of the principal results obtained by the survey.

Distances and elevations of the principal points on the road from the Shenandoah mountain to Back Creek mountain.

	Distances in 4 pol. chains.	*Elevation in feet above the Cow Pasture river.*
Eastern base of the Shenandoah mountain,	0	387
Top of do.	107	962
Thence to Shaw's fork,	230¼	56
Thence to top of Shaw's ridge,	50½	320
Thence to Cow Pasture river,	58½	0
Thence to top of Bull Pasture mountain,	172½	752
Thence to Bull Pasture river,	190½	88
Thence to the top of Jackson's mountain at Bell's gap,	654	1463
Thence to Straight creek, or western base of Jackson's mountain,	122½	914
Thence to top of Straight creek mountain,	246	2009
Thence to western base of do. on the dividing ridge between Jackson's river and the Potomac,	210½	1159
Thence to top of Back Creek mountain,	94½	1654

The elevations have not been obtained by actual levelling, but are computed from the graduation of the road: They shew the relative height of the mountains and water courses traversed by the survey.

The results obtained from Greenbrier river to Tygart's Valley, are of a most interesting character. They are as follow:

	Distances in 4 pol. chains.	*Elevations or depressions in regard to Cheat river.*
Greenbrier river,	0	787 ft. below Cheat river.
Top of Greenbrier mountain,	372	211 above do.
Cheat river,	146½	0
Top of Cheat mountain,	344¼	278 above do.
Tygart's valley river,	690	1647 below do.

The great elevation of Cheat river, which flows, as it were, along the top of a high mountain, is a fact worthy of record. A feeder more advantageously situated than this river, which affords at all times an abundant supply of water, could not be desired. The top of Greenbrier mountain being only 211 feet above it, nothing would be more practicable than to bring it over this ridge, especially through ground always moist, where the length of a feeder could not be an objection. Otherwise, the feeder might be taken out of the very point where the road crosses the river, by means of a high dam, and be made to pass through the mountain in a tunnel, which by driving a deep cut for some distance, might be reduced to less than one mile.

The distance between Cheat river and the same level on the east side of Greenbrier mountain, being scarcely 1½ miles.

This point of Cheat river in a straight course is only about
- 6 miles from Tygart's Valley river,
- 5 miles from Greenbrier river,
- 13 miles from the North Branch of Potomac,
- 16 miles from the South Branch,
- 16 miles also, from Back creek, a tributary of James river.

A feeder taken out of Cheat river through Greenbrier mountain, would retain its supply on this damp mountain, and might very likely be made to reach with great facility the point of the Alleghany, where the waters of Greenbrier, the Potomac, and James river part; which, judging by the eye, is hardly higher than Cheat river itself. From this point the water might be distributed in any proposed direction. As to the degree of facility afforded by the ground for the execution of any scheme of this nature, it could now be but mere conjecture.

Though unconnected with the object of this report, it has appeared to me, that there was in these facts a degree of interest which might recommend them to your attention. The profile of the road accompanies the map which has been prepared from the survey, and will illustrate the above statements.

STAUNTON AND JAMES RIVER TURNPIKE.

The State having become interested in this road by an act of the 24th February, 1826, I examined it in the month of October last.

The section between Staunton and Waynesborough had been completed for some time, and tolls had been collecting on it since the Spring. The road was also finished between the last town and the Blue Ridge, up the western face of which it was then progressing. Another contract beginning at the eastern base of the Ridge, had advanced as far as Israel gap through the Ragged mountain.

Between Staunton and Waynesborough the location did not appear so good as it might have been made; too much regard having been had, I thought, to the straightness of the road, in consequence of which it has been made a succession of short ascents and descents, at an angle which appeared, occasionally, to exceed 5°. The graduation has been obtained in many places by expensive excavations and embankments, which are usually incident to the making of a perfectly straight road through a rolling country. The location is particularly unfavorable in the vicinity of Christian creek: but beyond this point, as it approaches nearer to Waynesborough, it becomes gradually better, and is good near this small town.

The whole of this section has, besides, a defect upon which I had occasion to make some remarks in my report of last year upon the Kanawha turnpike. I have reference to its being too much raised in the middle, which is 15 inches above the edges, whereby they are made to incline too much to be approached by carriages, especially where the road is made by embankment; so that it is nominally from 18 to 22 feet wide, but virtually only about 12. Through level ground, an elevation in the centre of the road of 1-24 of its width, is the maximum rounding that should be given. But wherever a road slopes forward, a rounding is perfectly useless: for the water will run along the ruts whatever the elevation may be in the middle; and, therefore, it is only on occasional paved gutters that one should rely to turn off the water from the road into the ditches. A rounded road rather causes ruts to be cut deeper, by the weight of waggons bearing mostly on the wheels towards the edge of the road. It is generally said, that the rounding of a road should be somewhat increased in the making of it, because it will sink after being travelled: this is true in the middle of it, but the lateral slopes remain forever too steep: and, besides, in opposition to this observation, it must be recollected that wherever the road is cut out of a hill side, the outer edge being made-earth, whereas the inner one is solid, it will settle and become rounded, though it might have been made flat at first: in such situations, therefore, the outer edge of the road should rather be raised than depressed.

Much of this section will require capping with stone.

From Waynesborough to the foot of the Blue Ridge, the road is well made. But, immediately at the base of the mountain, it has been kept through a low bottom, where it will be muddy, and will require capping. It appeared to me that the ascent should have begun sooner, whereby it would have been made easier, and this muddy part avoided: I was, indeed, told that such was the original location. It is, I think, to be regretted, that present economical views have induced a change, which brings the road to a grade said to be 5½ degrees, but which, if I trust my eye, will exceed them in places. I I fear that on this declivity the road will wash; and if to this the consideration be added, that the road through the bottom will require capping, it may be doubted, whether, in the end, this change will result in any economy.

On the eastern side of the Blue Ridge, the original location descended the mountain at an angle of five degrees, keeping mostly above the present road; it passed through a great deal of solid rock. This location was judiciously changed by the present Engineer: the new plan proceeds upon the principle of retaining such parts of the old road as are practicable; and, wherever too steep, of correcting the grade by a graduation at 5½ degrees.

From the foot of the mountain, the road keeps for some distance in a soft bottom, where it will cut very deep; there is, close to this route, a leading ridge, which it seems would have made a good road, and I was told, that it had originally been intended to have been taken. What the reasons are, which directed so disadvantageous a change, I have not understood, but they certainly were not considerations of economy; for the firmness of this part of the road will not be obtained without much expense; and I doubt whether it would not, even now, be expedient to locate the road on that ridge.

Thence to the Ragged Ridge, the road passes through many low and miry places, some of which, I thought, might have been avoided by slight deviations from the direct course: these places will require immediate capping.

The Ragged mountain is crossed at Israel's Gap; the grade is said to be 5½ degrees; the mountain is so steep and broken that it could not have been less. This part of the road is well made. There the work ended at the time of my examination. It had been my intention to have viewed the whole location as far as Scottsville, but the Engineer for this road being then absent, I could not accomplish it.

In general, on this road, so far as it has progressed, the culverts are too small. Whenever an elevation of 2½ feet cannot be obtained under them, I should prefer paved gutters. It appears that lately, the Directors have become sensible of their superior advantages, as some have been made on the last piece of road. In addition to these, I would recommend to reserve, along graduated hills, a level space at each gutter; for the purpose, not only of making it more perfect, but also as a place of rest for waggons: this is particularly expedient in short turns, where the draught falls chiefly, if not altogether, upon the two last horses, and requires too much straining, if, besides turning, they have to pull up a steep ascent, or hold back a heavy load. An attention to all these particulars is of the utmost importance, and is, in fact, what characterizes a good road.

This turnpike has cost, from Staunton to Waynesborough, a distance of about 11 miles, $700 per mile, including bridges: some extra expense was incurred for additional culverts, not provided for in the first instance. This section was made by Messrs. Browns.

Across the Blue Ridge, about five miles, it was contracted for by Messrs. Chapels, at $ 5,500 for the whole distance and also including bridges: that at Waynesborough has been expensive, though it appears defective in the plan about the foundations.

The balance of the road, 27 miles, was undertaken by Col. Coffman, for $ 685 per mile, including bridges.

This turnpike will greatly benefit the trade of the upper country, and it is reasonable to expect that it will add much to the revenue of the James river navigation; about eighty miles of which, will now substitute the same distance of land transportation over a very bad road.

Farthermore, the removal of the towing bridge to a wider place has increased its length, and has placed its piers on bad foundations. Lastly, part of the presumed economy is obtained by converting the guard lock into a lift lock of a few feet. This is objectionable, on account of the constant attendance this lock will require. If we sum up the expense of this attendance, together with the annual repairs of the dam and its ultimate re-building, which from its construction is inevitable, we shall find an actual loss instead of an economy. The price of the dam was stated at six thousand dollars.

At the time I saw it, it leaked so much that it could not swell the water to its top; in consequence of this, some difficulty had arisen with the contractors, the settlement of which, if made, has not come to my knowledge.

The bridge was far advanced: it will, I am convinced, yield a handsome revenue, should a tariff of tolls be fixed for travellers crossing over it. It is built upon a very cheap and simple plan.

On the south side, in consequence of a want of foundations at the lower end, the Commissioner found it necessary to remove the two connected locks some distance higher up. This has so much contracted the basin just above, that a double lock-full of water taken out of it, will have a considerable effect on its depth. This defect is rendered still more disadvantageous by the distribution of the fall between the locks, to which I objected in my report of last year, page 237. The first lock is of a lift of 9 feet, the second, 8 ft. 10 in. The 2 last, 9 ft. 3 in. each, are connected. This is entirely contrary to what should have been done: there should have been a difference of about 1 ft. between the lower ones and those above, to compensate for the gradual draining of the basin between, which must otherwise take place if not particularly attended to, as was remarked in my report of 1825, page 132.

I would even now recommend such modifications as would make these locks of the following lifts: the two upper ones 9 feet 8 inches, and the two lower ones 8 ft. 6 in. The two connected locks are constructed on a cheap plan, being made of rough masonry, lined inside with plank: in a work of this importance I should not recommend so slight a construction, especially for connected locks of so considerable a lift.

In the locks last constructed, a plan has been introduced which has the advantage of lessening the agitation of the water discharged through the culverts: it consists in lowering the breast-wall and mitre sill by an offset below the bottom of the upper level, and consequently increasing as much the height of the gates; the offset being made large enough for the gates to turn in. By this arrangement the wicket gates are below the bottom of the upper level; and a frame of timber may be built before them, which, without interfering with the bottom of the boats, will receive the shock of the water, and force it underneath close to the floor of the lower level; by which means the agitation of the water is much diminished. But, though advantageous in this respect, I do not think that this plan should be imitated; as it necessarily increases the length of the lock by the dimensions of the frame, and must add in this and other respects to the expense. The frame appears, besides, liable to injury from the boats that enter the lock. Culverts made in due proportion to the pressure, are, I think, preferable.

For motives of economy, several culverts which had been intended, have been dispensed with, and the creeks received into the canal, under the presumption that they would not do much injury. I am very apprehensive that the event will condemn this measure; especially as it seemed to me, that the number of wastes was not sufficient to pass off the abundance of water, which, in heavy rains, may descend in torrents from these mountains, and cause the canal to overflow its banks.

It may be supposed that the culverts, if found necessary, may be constructed hereafter: but such works passing under the canal, could not be built without both great extra expense and considerable stoppage of the navigation.

REPORT

ON THE

KANAWHA TURNPIKE.

I did not remark on this road, this year, any thing more than what was noticed in my report of last year, except the completion of the beautiful bridge over Greenbrier river. As to the burning of the Gauley bridge, it is an event with which the public has long been acquainted.

The defects of the construction of the bridges over Dunlap's creek, are now plainly demonstrated by their appearance: it is only by braces and props that they can be preserved.

The contractor for the repairing of the road was discharging his duty faithfully. I pursued my examination only over the distance where I expected to see some new work since last year; and then returned to attend to other duties.

THE CANAL NEAR RICHMOND.

This canal has stood the high freshets of last summer remarkably well: the accidents have been inconsiderable, and the repairs but few. Some slight breaks took place at other times of the year, but none of any importance.

The parapet wall of the Dover acqueduct has cracked perpendicularly, nearly above the point of the arch where the rupture would take place, should the abutments give way: it appears, besides, that this opening has been gradually increasing; from these united circumstances, a motion in the abutments may be apprehended, which might ultimately cause the fall of the arch.

The cracks in the abutments of the Tuckahoe aqueduct have not increased: it is to be hoped, therefore, that this work has finally settled. One of the wing-walls, however, was prostrated in the Spring: it has been re-built. But, three of the wing-walls are now considerably bulged, and will certainly fall down before long. The arch of the aqueduct leaks much: this defect should be attended to: otherwise, the lime will be gradually washed away, and the stability of the arch endangered.

The canal leaks much near the four-foot lock: the water percolates in other parts; but this is the most important leak.

The lower bank of the basin just below the first lock at Tuckahoe, is much abraded; it should be strengthened by paving. One of the culverts of the lower lock was out of order; but undergoing repairs.

The floating gates which had been made for the purpose of doing away the necessity of building so many fences, had been constructed rather too slight: they were carried away by the large boat which used to navigate the canal last spring. The trial made of these gates, has demonstrated the efficacy of the plan with heavier timber.

In all other respects, the canal is in perfect order; and appears to have been attended to with great diligence and care by the Superintendent employed by the James River Company.

THE LITTLE RIVER TURNPIKE.

I viewed, during the month of November, 15 miles of this turnpike, from Alexandria to the point where it is met by the Fauquier turnpike. It is now quite a different road from what it was two years ago. The Company have been repairing it since, with small broken stones, on the plan usually called M'Adams'. It will now be one of the best roads in the United States; and, should it be extended from Winchester to the Ohio, even at first by a common, but well graduated and shaped road, it cannot be doubted that it would obtain a great proportion of the western trade and travelling; and that its revenue, which is now 5 per cent. to the stockholders, would be so much increased as to render it probably the most profitable improvement in which the State is interested.

FAUQUIER AND ALEXANDRIA TURNPIKE.

This turnpike may be with propriety divided into two distinct sections: the old and the new road. The old road extends from near Fairfax court-house to Buckland, a distance of about twenty miles. It is now in very bad order, especially from the Little River turnpike to Centreville. Its present condition combines with its natural defects, which were noticed in my report of June, 1824, page 21, to make it very unpleasant to travel.

The most remarkable defect is the size of the stones with which it is capped: they should be gradually broken to a smaller size; and it is to be regretted, that the funds would probably not allow to reduce them at once to the small dimensions contracted for on the new section.

Another defect, which I had also noticed in the aforesaid report, consists in the elevation to which the bed of the road has been raised in places by excavations made at the sides; so that the summer roads being much below the mound formed in the middle, are made the receptacle of all the water which falls on the road, and are easily cut up; while on the other hand, the winter road is rendered more liable to be destroyed at the edges, and carriages cannot pass from the winter to the summer road, as the convenience of travelling often requires.

The Company seem to have become aware of these two defects as they progressed in the execution of the road, which, in both respects, becomes gradually better beyond Centreville.

Since my first examination, 2½ miles of the old road, from Buckland, eastward, have been improved by capping with small broken stones. This is now the best part of the whole turnpike, even to Warrenton. It appears to be the intention of the Company to go on gradually with the improving of the old road. This indispensable measure will for some time diminish considerably the revenue of the road, but will ultimately insure greater profits and other benefits.

A new stone bridge has been built on Bull run, 5 miles beyond Centreville, at the third toll-gate. The wooden bridge two miles from Centreville, has been injured, and will be repaired.

The new section of the turnpike lies between Buckland and Warrenton: it is about 8½ miles in length, and was making upon the plan commonly designated as M'Adams's: it is generally well shaped: but the paths next to the stone bed are rather too narrow; it would have been better, I think, to have thrown them both into one, on the same side of the road.

The paved gutters are well made, but too narrow. In many instances, where sufficient elevation can be obtained, I should have preferred culverts to pass off streams.

The bridge at Buckland has been carried away by a freshet: it will shortly be re-built.

I was informed by the President of the Company, that this section had been contracted for at $28,000; in consideration whereof, it was to be overspread with a bed of broken stones, 12 inches thick, and 18 feet wide, leaving on each side a path of 3 feet without stones: the stones to be broken to 6 ounces weight.

They exceed, however, much these dimensions: Their present size will certainly prevent their crushing sufficiently to become soon cemented: So that, for a long time, they will only form a bed of rolling stones extremely fatiguing for draught horses: They should be broken smaller, or else the largest should be raked out of the road.

As to the other particulars of the formation of this road, the law expresses itself thus: "That the President and Directors of the said Company, shall be, and they are hereby authorised to construct the road from Buckland to Fauquier court-house, of the width of sixteen and an half feet to be paved and completed upon said M'Adams' plan, with a path on each side thereof, five feet in width, and a summer road on each side of the said path, of eleven feet in width, with a ditch between the same 3 feet in width." The road has not been made upon this plan, as regards the ditches and summer roads which do not exist, and the paths which are narrower: And it does not seem to me, that it could have been made so, without a very considerable expense: Nor does it appear that, if so made, there would have been much advantage in the plan: a ditch between the summer road and the paved road is, I think, objectionable; and I should consider that, without an intervening ditch, one of the paths 5 feet wide, united to the summer road 11 feet in width, would have formed on one side, a wide summer road connected with the winter road, and much more convenient than two narrow summer roads separated from the main one by a ditch; so that two carriages meeting on either, could not have passed each other.

Respecting the benefits that will accrue from this turnpike, I apprehend that they will necessarily be limited until it shall have been carried through Thornton's Gap, to intersect the road along the valley of the Shenandoah at some suitable point. It will then save probably 40 miles in distance, and invite a great proportion of the trade and travelling from Staunton, Harrisonburg, and the adjoining counties. I should think that, in order to attain this end, it would be expedient to construct at once, over the whole distance, a well located, but common road, at as little an expense as possible; reserving to cap it with stones and otherwise improve it, as its advantages would develop themselves. The making of short and partial turnpikes, progressing by slow steps towards a distant object, can seldom be productive of any benefit; and I should, in general, be inclined to advocate the policy of opening at once, upon an economical plan, a whole line of communication, in order to bring the benefits expected from it immediately into action, leaving it to be perfected as circumstances might require and dictate. Roads can almost in every case, be made in this prudent and progressive manner, which is best calculated to secure immediate beneficial results with commensurate means.

ON THE MANCHESTER AND PETERSBURG TURNPIKE.

This road traverses a flat country, and consequently did not present any great difficulty of location. It is generally well shaped, and particularly good at both extremities; and, with proper attention to a few particulars, in which it is susceptible of improvement, it can be made an excellent road.

In the first place, the gravel spread over the road, contains rather too great a proportion of earth, and exceeds, in many instances, the size requisite to make a good road. I have also observed here, as well as in other turnpikes, that, after having given to the road its proper shape, the gravel was then spread over it; whereby the middle road is frequently raised too high above the side-roads, and is not united with them by an easy slope. In shaping a road which is to be gravelled, allowance should be made for the space that will be occupied by the capping; or otherwise, a proper excavation should be made afterwards in the middle, to receive the coat of broken stones or gravel.

A few miles of the road, about the middle of the distance between Petersburg and Manchester, have not been gravelled; it appears to me indispensably necessary that they should be so.

The south abutment of the bridge built last year over Swift run, has given way, and must be re-built.

REPORT

ON THE

IMPROVEMENT OF THE LOWER APPOMATTOX.

The improvements below Petersburg, have for their object to enable vessels drawing 7 feet of water, to come up to this town. The obstructions to the navigation extended to about five miles below it, and consisted in accumulations of sand, which had been gradually deposited by the Appomattox, and had reduced the depth: at one place, called the Stop Bar, two miles below Petersburg, it was only 4½ feet.

The depth intended to be given by the improvement, is from seven to eight feet at high water: this is to be effected by contracting the channel, by means of jetties made of fascines united by wattles, and loaded by alternate courses of gravel: these jetties extend, at proper places and distances, from each shore. On a movable foundation, this is the most expedient and stable kind of work that can be used, as it adapts itself to the shape and variations of the bottom. Such works are used to a great extent and success in Holland, and on the Rhine, where I have seen them sunk to a depth of 30 feet.

The mean width of the Appomattox is there about 100 yards, which it is intended that the improved channel shall not exceed.

The common ebb-tide flows with a velocity of a little more than one foot per second: the volocity in freshets has not been measured; it is supposed by Mr. Stein, the Engineer who conducts these works, to be from 2 to 2½ feet per second.

The mean floods rise between 2½ and 3 feet; and it is said that the greatest freshets in the distance occupied by the improvement, never swell the Appomattox over three feet.

In two places, the channel has been straightened by cuts through shoals, in order to avoid turns, which contribute to their formation, and increase the difficulty of navigation. The first cut is at Blandford, a quarter of a mile below Petersburg; it extends 500 yards, and is 80 feet wide: it has been opened through flat low grounds easy of excavation, except just at the head of it, where rock was excavated for a distance of about one hundred feet. This cut was dug in the Fall of 1825 and

[illegible] spring, down to low water mark, which made the [illegible]
[illegible] feet deep. When I reached Petersburg, [illegible]
[illegible] and snow, which swelled the Appomattox
[illegible] at the lowest stage of the river [illegible]
[illegible] as that of a mean flood. I then sounded
[illegible] and found it 5 feet deep at the [illegible]
[illegible] 7, and even 8 feet in depth, which
[illegible] about 1½ foot.
[illegible] Archer's island, 3½ miles below Peters-
[illegible] bed of sand, and measures 2200 feet
[illegible] it was dug 3½ feet deep, and
[illegible] The main channel next
[illegible] fences and brush for part
[illegible] the energy of the current to

[illegible] to be composed only of
[illegible] when more rapid than one
[illegible] in motion; it is very pro-
[illegible] to a much greater depth.
[illegible] been narrowed and straight-
[illegible] and two on the left, made
[illegible] which formerly was 4½ feet
[illegible] half a mile above
[illegible] 8 feet.
[illegible] themselves
[illegible] strong, and
[illegible] continue
[illegible] dimensions as will
[illegible] As the water did
[illegible] examine minutely the
[illegible] description given to
[illegible] executed on good princi-
[illegible] appeared to have been made

[illegible] which, at all times, has
[illegible] and in which, more
[illegible] perhaps any other works. On
[illegible] different heights, animated by dif-
[illegible] their current according to the
[illegible] their rise or fall, such improve-
[illegible] A high freshet, for instance, of long
[illegible] excavation of the bottom
[illegible] action, and produce but
[illegible] a sudden and short flood, will exca-

vate little and create enormous accumulation of gravel and sand in places. Moreover, the level in rivers which have a constant current, sinking with the excavation made; and, at the same time, the velocity increasing, the advantage obtained is rarely in proportion to the work done.

Below tide water, on the contrary, the alternate powers of the ebb and flood counteracting each other, a contraction of the channel over a bar has frequently the effect of injuring rather than improving the navigation, by creating new bars instead of that removed by the oscillations of the tide at the contracted spot.

At this improvement, however, the case is essentially different from both the preceding. On one hand, the level of the water remains constant, whatever may be the excavation; and consequently, every foot dug is gained to the navigation. On the other, the ebb tide receives additional energy from the waters of the Appomattox, which rises occasionally enough to drive forward the sand at the bottom; but, it seems, never so much as to overthrow it and produce sudden changes in its constitution. This regularity of the power, both in its direction and energy, is a circumstance very favorable to the permanency of the improvement; which, even should an extraordinary freshet cause some local deposition, would resume its slow but sure operation to wear it away.

The works which remain to be done, are: To increase the depth of the cuts at Blandford and at Archer's island; to close the main channel at both places; and to make some more jetties from Blandford down, in order to regulate the current, fix permanently its direction, and keep it away from the shores, which might otherwise be abraded and change the current.

As regards the cuts, it appears doubtful whether they will attain the intended depth, so long as the old channel continues open, though contracted. Should it become necessary to increase their depth by dredging, the operation would be very expensive. But, since there is now as much depth in Archer's Island cut, as formerly existed over the Stop Bar, and it is probable that it will be increased during the winter, it seems that it would be perfectly safe to force the navigation in the spring, through the cuts. The temporary inconvenience that the navigation might experience from this measure, would bear, I think, no proportion to the expense of dredging; especially since it is exceedingly probable, that then the depth through the cuts will exceed in the spring, that of the former navigation, and would soon be made as much as contemplated. This change, however, should be made progressively for fear, as the cuts are narrow, that the current might produce too rapid an effect upon their bottom and sides, which might cause some temporary obstruction below.

The probable expense of the works has been estimated by the Engineer at $ 28,500, exclusive of superintendence and contingencies, which are represented as considerable, owing to the difficulty of procuring an adequate number of hands, and to the sickliness of the site of the works. 240 shares have been subscribed by the corporation of Petersburg and by individuals. 70 per cent. have been paid, and will about meet the whole expenditure to the beginning of this year:

This amount,	$16,800 00
Leaves due by subscribers,	7,200 00
The whole capital authorised by law, is	40,000 00

As to the advantages of this scheme, they present themselves under two points of view; the interest of the town of Petersburg, and that of the stockholders. The former is evident. The improvement will save, it is said, $ 12,000 of lighterage a year, and bring vessels to the wharves of Petersburg.

As to the advantages held forth to stockholders, I have been furnished with the following estimate of the produce which is exported from Petersburg:

40,000 bales of cotton, equivalent to	240,000	barrels
10,000 hogsheads of tobacco, comprising that inspected at Petersburg, (at the lowest 5,000) and what comes down the Appomattox from Farmville,	80,000	
60,000 barrels of flour,	60,000	
Sundry other articles,	20,000	
Total,	400,000	

which, it is supposed will load 800 vessels, drawing, on an average, 6 feet of water, which paying, coming and returning, 50 cents tolls per foot each, will produce $4,800 00

Admitting that the whole sum authorised to be expended, (which will probably not be the case, if no dredging becomes necessary,) this amount of tolls will be 12 per cent. on the capital of $40,000. Some deduction should be made from the above; because vessels which draw less than 4½ feet paying no tolls, it is probable that some produce will go in them to City Point. I am, however, rather inclined to think that this will not take place to any great extent, because merchants will save, most likely, as much as the tolls, by making large loads; and, besides, some allowance should be made for an increase of trade. But, even reducing the revenue produced by the improvement to $4,000, it would still be 10 per cent. on the expenditure.

REPORT

ON THE

SURVEY OF THE MATTAPONY.

This river was surveyed during the month of November last, from Aylett's up to the Milford bridge, near Caroline Court-house. A glance at the Map of the State will shew, that above this point the Mattapony approaches so near to the Rappahannock, and Fredericksburg, that the produce would be carried there by land in preference to descending the river. A more winding river I never surveyed.

The distance from Milford to Aylett's is:

By the river,	54 1-4	miles.
By the nearest road,	28	"
In a right line,	21 7-8	"

The head of tide water is about six miles above Aylett's, by the windings of the river.

The whole fall from Milford to tide water, that is, in a distance of 48 miles, is 73 feet.

This fall is not uniformly distributed, but increases gradually as the river is ascended. At the lower end it is under one foot per mile, and near Milford about two feet.

When I viewed this stream, it was not at its lowest; it kept during the whole time of the survey somewhat swelled. It then ran very smoothly, and presented no other obstacle to common batteau-navigation, than now and then some fallen trees and hedges. It is said, and appearances indicate, that for three or four months in the year it does not afford water enough for the transportation of produce. It also appears that the body of water has been observed to have decreased since the clearing of the adjoining land. This circumstance is not peculiar to the present stream, and results from very obvious causes: it should be considered, whenever in an uncultivated country, an artificial navigation is contemplated, for which the supply of water is rather scanty.

The head of navigation is now at Aylett's: but of late years a bar has been forming some distance below, which is attributed to the sand washed from cleared lands. Indeed, this result is to be anticipated in most of the small inlets of the sea, wherever the soil is given to tillage. It does not appear that any successful plan could be devised to remove this bar permanently, the body of water furnished by the river being rather too small for the purpose of keeping it open.

From Aylett's to Milford, the banks of the river are generally low, and frequently wet: the bottom is sand, and sometimes very small gravel: The obstructions for one half of the distance are, as above stated, occasioned by fallen timber and hedges. These obstructions, however, are fewer in the upper part; but, there the fall being greater, the number of sand bars is more considerable.

As to the improvement best suited to this river, it must first be remarked, that the distance from Aylett's to the 23d mile of the river being only about ten miles by the road, land transportation would very likely be preferred to navigation within this distance. There is consequently left, only about 31 miles of the river, occupying a section of country of 12 miles in length, for which navigation would be more advantageous than land carriage. The breadth of this section is, moreover, confined by the proximity of the Rappahannock and Pamunkey within narrow limits. It is, therefore, obvious that an expensive mode of improvement would be inexpedient, and that benefits of an entirely local character are all that should be aimed at. To remove the fallen timber and hedges out of the channel, is all that appears expedient: it will facilitate the escape of the water, and remove some accumulations of sand caused by these obstructions. The river will then be navigable for batteaux for eight or nine months in the year: A sum of eight hundred dollars will, I think, be fully adequate to this object.

The numerous and considerable bends of this river, might possibly suggest the idea of cutting across several of them; but besides the expense of such a plan, far from improving, it would injure the navigation. There is, for instance, a bend called the Pocket Neck, which is two miles round, and not more than a quarter of a mile across: The fall of the river between the two extreme points is about 4 feet. If a straight cut were made through it, the soil, which is already too light to resist the present current, would yield still more easily to its increased energy; and a considerable accumulation of sand and gravel would inevitably take place at some point below.

A stream moving through a valley with such a fall as will produce a velocity which its bottom and banks cannot resist, will continue to modify its course, until it has lost its power of abrasion, and established itself permanently in its bed. But, in order that such may be the case, it is evident that it must lose its rapidity, and consequently, that its fall per mile must be reduced. This necessarily requires that the length of its course should be increased within the distance where the fall is too considerable; whence it follows, that the more moveable the soil upon which a river flows, the greater will be its disposition to increase the winding of its course; and it will continue to do so until it has arrived at a uniform and permanent constitution; it is, therefore, an error to consider the crookedness of such a stream as a defect, and as the work of mere chance; it must, on the contrary, be regarded as an effect of the wise laws of nature. To rectify the course of a river in such a case, is consequently not assisting nature, but violating her immutable laws; from which, nothing but failure can be expected.

In some cases, a bend may be produced by a cause purely accidental, in others, the advantage obtained at a particular place, is much greater than the injury done at another: Under such circumstances, it may be judicious to rectify the course of the river, but, in general, the straightening of rapid streams, wherever it increases materially the fall, though it may for a time appear a benefit, will ultimately be productive of mischief. Of this, thehis tory of the improvements done upon rivers affords numerous instances.

Respectfully submitted,

C. CROZET, *P. E.*

LETTER FROM THE PRINCIPAL ENGINEER,

TO THE

BOARD OF PUBLIC WORKS,

TRANSMITTING

Certain papers relative to a connexion between the waters of the James river and the Kanawha, by means of Dunlap's creek and Greenbrier river.

RICHMOND, January 17th, 1827.

To the President and Directors of the Board of Public Works.

GENTLEMEN,

I have the honor to lay before you some papers I have just received from the War Department, exhibiting the most prominent facts relative to a connexion between the waters of James river and the Kanawha, by means of Dunlap's creek and Greenbrier river.

The facts stated in these documents, are not quite so favorable as the public was led to expect, from reports previously circulated; and I am inclined to consider the situation of Cheat river, to which I have adverted in my report on the Staunton and Parkersburg road, as promising more favorable results.

I am, respectfully, your ob't servant,

C. CROZET, *P. E.*

GEORGETOWN, Dec. 11th, 1826.

SIR—In obedience to your order of the 7th instant, to furnish the Department, as soon as practicable, with the information asked for by Col. Crozet, in his letter which accompanied your order, I have the honor to state, in reply to his enquiries:

1. That a bench mark having been established at the mouth of Dunlap's creek 3.625 feet above the surface of the water, (and 12.095 ft. below the bench mark made by Messrs. Moore and Briggs,) "the lowest point in the dividing ridge between the James and Greenbrier rivers," was found to be 1098.78 feet above our bench mark at the mouth of Dunlap's creek.

The depression alluded to is situated between a tributary to Dunlap's creek, on the one side, which debouches near Crow's tavern, and a tributary which empties into the south fork of Howard's creek, near Comb's saw-mill on the other.

2. "The height of the assumed summit level," is 700 feet above our bench mark at the mouth of Dunlap's creek.

3. "The distance which, at the level of the assumed summit, would require deep excavation and tunnelling through the dividing ridge," is 4 miles 7 yards, viz: limiting the deep cutting to 35 feet, there would be,

On the Eastern side,	0 miles,	395 yards of cutting.	
On the Western side,	0	932	"
Tunnel,	3	440	"
Summit level,	4	07	

But, supposing the cut extended to the depth of 50 *feet on the Western side*, (which, in consequence of the very gradual slope, would seem preferable to 35 feet,) the cutting and tunnel would be,

On the Eastern side,	0.395
On the Western side,	1.332
Tunnel,	2.1040
Summit level,	4.07

4. "The length of feeder required," for the supply of the summit level, would be, by the route surveyed, 38 miles 921 yards; but, as the ground over which it passes, by that route, is extremely unfavourable, it is quite probable that important deviations may result from ulterior surveys.

5. "The quantity of water to be relied on;" in reply to this, Col. Crozet's last enquiry, reference may be had to the accompanying table.

I have merely to add, on this head, that favorable opportunities frequently occur for the formation of extensive reservoirs on the Greenbrier river.

It would have given me pleasure to have gone more into detail, and to have communicated all the leading results of last Summer's survey, but the present state of the plotting, which is but in its incipient stage, does not admit a fuller exposition than has been given.

Col. Crozet's letter is herewith returned to the Department.

With the greatest respect, general,
I have the honor to be,
Your ob't and humble serv't,
WILLIAM G. M'NEILL,
Capt. T. E.

Major General Macomb,
Chief Engineer, Washington City.

The following Table exhibits the results of some of the measurements of the principal streams on the James river and Kanawha canal.

Name of stream measured.	*When measured.*	*Where measured.*	*Quant. of water expressed in Cub. ft.*
	1826.		
Jackson's river.	August 7	Above the mouth of Dunlap's creek,	157.2
	16	" " Potts' creek,	156.8
	24	" " Dunlap's creek,	152.05
Greenbrier river.	10	" " Howard's creek;	230.7
	20	" " "	79.5
	21	" " Anthony's creek,	70.
	25	" " Howard's creek,	148.6
	Sept. 5	Below " "	97.
	6	" " Anthony's creek,	95.6
	7	Above M'Clure's mill,	73.3
	8	" the mouth of Laurel run,	49.
	9	" " Stamping creek,	42.3
Dunlap's creek.	August 7	4 miles from Covington, below Ogley's creek,	22.6
		At its mouth,	25.6
	9	Above the mouth of Snake run,	19.
	24	At its mouth,	2.09
Dunlap's creek.	Sept. 27	"	22.
Howard's creek.	August 10	Below the White Sulphur Springs,	11.6
	19	" " "	7.8

Howard's creek.	August 25	At its mouth,	6.83
	Sept. 25	"	10.9
Anthony's creek.	August 21	6 miles from its mouth,	11.5
	Sept. 6	At its mouth,	14.3
Potts' creek.	August 7	"	65.3
	16	"	34.9
Craig's creek.	25	Below the mouth of Roaring run,	157.7
	Sept. 1	" " John's creek,	39.3
Second creek.	August 29	Below Patton's mill,	33.3
		At Knox's ford,	28.29
John's creek.	Sept. 1	At its mouth,	15.4
Sinking creek.		Below Johnson's mill,	1.42

In the foregoing Table, the fourth column contains the quantity of water *per second*, expressed in *cubic feet*. The results given in the table, shew the greatest and least quantity of water found in the streams mentioned during the months of August and September, 1826, with probably one or two exceptions.

The foregoing results have been obtained from hasty calculations, but they are believed to be correct.

EXTRACT

RELATING TO

INTERNAL IMPROVEMENT,

From Governor Tyler's Message to the General Assembly,

THE 4TH DECEMBER, 1826.

Works are already in progress, of great benefit and importance to the State. The Dismal Swamp Canal, connected with the improvement of the Roanoke river, opens the prospect of extensive utility, presenting an improved navigation of upwards of four hundred miles. This canal, when it shall have been so enlarged as to enable the vessels navigating Albemarle Sound, to pass through it with facility, will open new prospects on Norfolk, our principal seaport town; and will offer immense advantages to the citizens of North Carolina and Virginia. This State has evermore cherished this improvement, as is fully testified, not only by her subscriptions to its stock and that of the Roanoke Company, but by loans effected with the Canal Company; and it cannot, therefore, fail to be a subject of much regret that she should be deprived by the interposition of the General Government, of the honor of having completed it, when it required but the mere finishing hand.

The improvement of the Appomattox above Petersburg, while it has opened new and important facilities to the trade of a fertile country, has not realized to the stockholders, as yet, any thing of profit. It has been considered judicious by the Company to enlarge their subscriptions, and the Legislature directed a further investiture of funds, but on conditions which the Company deemed unequal and oppressive, and therefore rejected. Whether sound policy would not dictate such changes in those conditions, as would be calculated more fully to meet the views of the stockholders, will no doubt be deemed worthy your enquiry. Should it be thought advisable to open a communication between the waters of the Little Roanoke and the Big Buffaloe, as seems to be wished and desired, and which can be effected by means of an intermediate portage of eight miles or less, strong hopes are entertained by many that it would in process of time have a most important bearing on the improvements which have already been consummated. At present it is only contemplated to improve the Buffaloe to the distance of some eighteen miles, the greater portion of which work is effected, and to mark out and improve the connecting road; and from the effects thus to be deduced, a probable estimate may be formed of the success of the whole scheme. So far it would seem proper to give encouragement to it; which encouragement may be dealt out in future, as results may seem to justify, with a more liberal hand. In regard to the contemplated improvement, the Fund for Internal Improvement will be found competent to contribute its quota without looking for aid from any other source.

Along with this I have communicated the Report of the Principal Engineer on the further improvement of James river—from it you will learn that the sum of $4,750,000, will be required to complete the canal, as originally contemplated, from Maiden's Adventure Falls to Covington. You will no doubt be struck with this fact, when the former report of Moore and Briggs is referred to. These gentlemen estimated the whole cost at about $ 1,800,000, including the improvements already effected; but the expense already incurred has equalled one million two hundred and fifty thousand dollars; and you will be at no loss to determine on the causes of the inaccuracy of their Report, when you shall have examined that now laid before you. In prosecuting farther improvements on this great central river, you will have to decide between the two measures of a continuance of an independent canal, and the improvements by locks and dams. I lay out of view the improvement by sluices, from the full conviction that in such a stream, it would offer but very inconsiderable advantages which would be seriously counteracted by its disadvantages: By opening sluices of sufficient depth, the difficulties of ascending it would be greatly increased, and on the occurrence of a slight freshet might be found to be entirely invincible except by the application of steam power. Nor could it be reasonably calculated that that power would ever be introduced, since it could not profitably be applied to the transporting of boats with little or no load, which alone would be employed on the ascending navigation; and since laden boats would float with sufficient velocity in descending by the mere force of the current without the aid of any new power. Besides, the navigation would be attended with manifest danger both on the ascent and descent. The force of the current in either case would often be sufficient to baffle the skill of the most experienced boatman, and subject him to certain wreck. The improvement by canalling, has heretofore been considered as possessed of decided advantages over any other mode; but considering the immense expense attendant thereon in comparison to the improvement by locks and dams, it becomes a matter worthy of the most serious deliberation, whether it would not be advisable to adopt the latter without delay, and to prosecute it to its final completion. The advantages of the first mode of improvement consist principally in the fact that you have at all times a still water, and of course a secure navigation, and enjoy the decided advantage of substituting the power of men by the power of horses. These are great advantages; but is not the first nearly attained by the ponds formed by dams? Through the greater portion of the year, the slight current which would agitate them would be advantageous, since it would assist in the descent with the loaded boat; and when we consider the rapid advances which science is every day making, and has already made in the structure of the steam boat, do I hazard any thing in saying that steam might and would be introduced, and thus furnish as cheap, if not a cheaper moving power than would be found on a canal? Under all circumstances, in times even of great freshets, the steam boat would controul the current, and transport in safety its attendant boats. This upon such occasions would be its principal office.

In deciding upon the merits of this mode of improvement, we should not hastily reject it; because of the disappointments which have sometimes attended it. These disappointments may be traced more to the imperfections connected with its execution, than to any other cause. If the dams be constructed with care, with due regard to permanency, and in such manner as to admit of being readily repaired in the event of that decay, to which all the works of man are more or less subject, no apprehensions need be entertained. Canals are also liable to sustain serious damage, and time too often betrays the little care bestowed in their original structure. But, admitting that the canal would be superior to the locks and dams in some respects, yet it should not be overlooked that in regard to the James river the State occupies the footing of a chartered Company, and it should not fail to look to a return of profit in the execution of the work. Having an eye to this result, while it is a matter of great doubt whether any profit could be expected upon so large an expenditure as a continued canal would require, yet that uncertainty wholly vanishes in reference to the other scheme. These considerations, then, induce me to recommend to your adoption this latter mode of improvement. When this desirable work shall be completed, a new era will be opened on the country watered by this noble stream and its tributaries. At present, with what great hazard and expense is its navigation attended? How great is the loss which society sustains in the subduction of so much of its labour and of so much time! Let this improvement be effected, and new relations will immediately spring up between the merchant and the farmer to their mutual benefit. A country now so far removed from market as scarcely to contribute any thing to the national wealth, in comparison with its actual and intrinsic capacity, will be awakened into life and be made to develop all its resources. An extensive portion of the State, in a measure alien in feeling from the tide-water country, will be brought into closer union with the latter, and admitted to a participation in advantages to which it is now almost a stranger. These are the high considerations which should operate on the Legislature to complete this improvement; but there are others of great force and of immense weight.

The General Assembly, in the exercise of its legitimate authority, in the year 1784, granted the exclusive right of improving the James river to a company composed of individuals, who, in pursuance of their charter, proceeded to the accomplishment of their work by cutting a canal of short extent, and by partially improving the bed of the river as far as Lynchburg. The improvement thus effected, was justly considered unequal to the wants of a large portion of the State; and the State itself, in the year 1820, purchased from the Company its chartered rights at a high premium, and resolved to prosecute the improvement on a scale at the same time magnificent and useful. By that purchase, it not only restored itself to its original authority over the subject, but confirmed its exclusive title by the annexation of individual and chartered rights.

Thus, it would seem to follow, that not the most ardent advocate of Internal Improvement by the General Government, could look for a moment to that quarter for aid in the achievement of this great enterprise. The right is effectually vested in the State, and the improvement must be effected by State means, or not at all. By these proceedings, hopes have been created, and just expectations excited, which it would be more than unwise to disappoint. The extension of the canal to Maiden's Adventure at a large expense, while it has led to the imposition of new burthens on the people residing in all the country above it, by reason of the increase of tolls, is attended with comparatively small advantages. Whilst it is admitted, that some few of the risks of navigation below its termination, are by its means avoided, it is nevertheless manifest, that it has tended in no degree to diminish the charges of transportation, except to the country lying contiguous to it. This is complained of as a grievance; whether justly or not, it is not my province to decide. But, it is a complaint which will give way before a wise system of policy. But, the Legislature extended its views still further than to the improvement of James river. It proposed to form a bond of union between the eastern and western portions of our territory by a chain of improvement, connecting the waters of the Great Kanawha with the waters of the Jackson's river, and for this purpose directed the improvement of the Kanawha to the Great Falls, and the construction of a turnpike road from thence to the town of Covington on Jackson's river. The improvement of the Kanawha is nearly consummated, and the Kanawha road is entirely completed, so far as was originally contemplated. The necessity and propriety, then, of completing the improvement by rendering navigable the Jackson's river from Covington, and improving the navigation of James river, and thereby furnishing the intermediate link between the two extremes, must be entirely obvious. As it now stands, of what utility is the Kanawha road, except for the purposes of neighbourhood intercourse, and as furnishing the facilities of travelling? Higher and nobler objects dictated its formation. It was destined to bring the man of the west and the man of the east nearer to each other; to introduce and sustain a knowledge of mutual dependence, and thereby to encourage a feeling of affection and regard for each other among the members of the same community. It was intended to excite a new spirit of industry, by furnishing a market to its surplus products, and thus to awaken new energies and to open new sources of national wealth. But, in its present condition, of what avail is the expenditure which has thus been made? The farmer beyond Covington finds himself as absolutely shut out from market now, as he was anterior to the construction of the road; for, having reached Covington, he can advance no farther. If permitted to remain in its present condition, would not the State stand justly chargeable with fickleness of policy? Would more have been done, than to have reared a perpetual monument of wise councils, hastily and precipitately abandoned? But waiving all these considerations, and forgetting, as far as we can, the great public benefit to be dispensed by this improvement, I beg leave to urge it upon you in another view. Its prosecution and rapid completion, is called for by mere pecuniary considerations. The State occupies the footing of a Company in regard to this work, and it behoves it to enquire into the situation of its funds and its probable profits. Now, then, there has been expended on this improvement already, $ 1,230,000; all of which has been procured on loan, and forms an outstanding debt against the State. The interest on that debt amounts annually to the sum of $ 71,673 50. In order to meet this interest, we are to look to the tolls now receivable; which, since the imposition of an increased toll on tobacco, may be estimated at $ 40,000; which, after deducting the expenses of repairs, &c. and the yearly dividend on seven hundred shares to the former proprietors, leaves applicable to the payment of the interest on the loans, about the sum of $ 18,000. Thus, there remains unpaid the sum of $ 53,473 50, which is made chargeable on the Fund for Internal Improvement. Here, then, is a debt, which is only to be discharged by a resort to an increase of taxes, and which, while it lasts, operates as a moth on the fund set apart for the beneficent object of State improvement, in violation of the principle on which that fund was created, and to the great grievance of other portions of the State. What expedient, then, is left, but that the scheme of improvement should be consummated; and that it should be achieved on such a scale, as to pay the interest on the loans contracted for its completion, and to afford a reasonable prospect of re-imbursement of the principal of those loans? That this will be the result, should the improvement by locks and dams be resorted to, and steam be successfully introduced, is fully demonstrated by the able Report of the Principal Engineer.

I shall find my apology in the importance of the subject for urging still farther considerations, growing naturally out of it. In all undertakings, calling for the expenditure of large sums of money, and looking to re-imbursement from the profits of the work when completed, rapidity of execution is essentially important. The expenditure is added to by delay, and becomes augmented by the payment of interest, and the loss of profit. The shortest possible time, then, should be taken for the completion of the work. When commenced, it should be prosecuted with untiring energy, to its completion. This is the dictate of sound economy. But, in order to ensure economy in its execution, as well as permanency, the work should be performed under the direction and controul of the Principal Engineer. All subordinate agents should be bound implicitly by his instructions. Thus, he would be made, to a proper extent, the responsible head. And a perfect security would be provided against all false estimates. But, if, on the contrary, subordinate agents are to be permitted at pleasure to controul the views of the Engineers; if his opinions are to be respected by them, or disregarded at pleasure, then he is relieved from all responsibility, and bound by no estimate. His office, in short, notwithstanding its great utility, in the other view becomes almost useless. Let me not be understood as implying a censure either upon the Engineer, or any other officer of the government by these remarks. My sole motive in making them is, to bring about a proper responsibility, and to afford a check over the public expenditures: and lest I might by possibility, be misinterpreted, I will take upon me here to say, that I regard Virginia as having in the person of her Principal Engineer, a gentleman of the most unquestionable talents; one, who unites to diligence in the discharge of the duties of his station, an ardent devotion to the public interests, and to an extensive theoretical knowledge, sound practical views.

In presenting to you the reasons, which have led me to urge upon you the improvement, forthwith, of the James and Jackson's rivers, as far as Covington, I have not overlooked other considerations of high moment. The improvement of the main river would be the sure precursor to the improvement of its numerous tributaries, watering, as they do, extensive and fertile districts. It would lead in time also, to the union of the head waters of the Shenandoah with those of the North river; one of those tributaries, whose near approach would seem to promise to the efforts of man, an easy conquest over nature, while the execution of the work, attended as it would be with the perfect improvement of the Shenandoah, would furnish a bond of union between the Potomac and the James, and afford to the former the choice of two valuable markets for the products of his industry. In addition to this, it is now generally supposed that the connection of the eastern and western waters is entirely practicable; but that in order to effect the union, it will be necessary to incur an expenditure so large that nothing short of full assurance of success would justify the undertaking. This improvement, as recommended, will serve in a measure, to develop the benefits of that great work, in furtherance of which great object, the extension of the Kanawha road to the mouth of the Guyandotte or Big Sandy, might be considered as auxiliary by bringing into more familiar intercourse with us, the citizens of the bordering States. It will necessarily awaken the attention of several of the western States to the subject, and even if found to be beyond the resources of one State, which I do not believe, may,, in the fullness of time, be accomplished by an union of States. Thus, would a bond of connexion be furnished which could not fail to be productive of benefits to all that it might embrace, and the work be effected in a legitimate mode by compact between several States, without violating the Constitutional rights of either. Whether this scheme, or that other which has been the subject of such minute examination with the Engineer Corps of the United States, and proposes connecting the waters of the Potomac with those of the Ohio, shall, after full examination, be preferred, remains yet to be decided. Or, whether a still preferable route may not be ascertained to exist between the waters of New River and those of the Jackson, or the Roanoke, are questions of deep interest. A thorough explanation of these different sections by one so well qualified as the Engineer of the State, to arrive at correct and satisfactory conclusions, would seem to be strongly called for.

It will not escape the attention of the Legislature, that a considerable portion of the territory of the State lying beyond the Alleghany, and embracing a great extent of rich and fertile soil, remains to a certain degree, in a state of nature, and labours under disadvantages of the most deplorable character. The wants of that country are limited and few, and may be satisfied at small expense. It requires that one, or at the most, two roads should be opened for the convenience of travelling. One of those roads is now in progress, and has been marked off in part by the Engineers of the State during the past season. It leads from some point on the Ohio river in Tyler county, through the intermediate counties, to Staunton; and forms a prominent link of connection between the extreme West and the Capital of the State: while the other, taking an opposite direction, might have its Southern extremity located at the mouth of the Little Kanawha, and its Northern at Winchester. Other parts of the State undeniably require the attentive regard of the Legislature; and, no doubt, will, in due time, receive their full share of the public patronage. I have the more particularly had reference to the country lying beyond the Alleghany, because of the very strong claims which I consider it as having on the public. Will it be credited by one a stranger to his condition, that the citizen of that extensive, and in many parts fertile country, is almost debarred from the possibility of reaching the seat of government, without, in the first instance, leaving Virginia and availing himself of facilities furnished by other States? With the knowledge of this fact, does it not cease to be a matter of surprise that the tide of emigration should flow still further West, and that fertile districts in our own State should remain unsettled? These roads, if constructed at public expense, charged with a slight toll, would soon reimburse that expense, and be ever after a source of profit. They require, at first, little more than to be opened and graduated; and considering the mountainous tract which they would traverse, and the scattered condition of the population, would, in my judgment, constitute a just exception to the general rule adopted in reference to the Fund for Internal Improvement.

REPORT

OF THE

COMMISSIONER

OF THE

KANAWHA ROAD AND NAVIGATION,

AND DOCUMENTS.

To the General Assembly of Virginia.

In obedience to an Act, passed the 24th of February, 1823, I beg leave to submit the following report:

On the 13th of March last, I delivered to the President and Directors of the James River Company, my official bond, took the oath of office prescribed by law, and entered upon the duties of my office. On the same day, I employed Mr. John Staples, a gentleman of known skill and experience, to act as Engineer, at a salary of $1200 per annum. On the 21st of the same month, I addressed to my predecessor in office, Col. William Anderson, a letter, of which a copy is herewith submitted, marked A. On the 29th of the same month, Colonel Anderson met me on the mountain section of the James River Canal, accompanied me along the whole extent thereof, furnished some notes explanatory of parts of the contracts made by him, and delivered me the public property said to be in his possession, a schedule of which is herewith submitted, marked B, and for which I granted him a receipt. He also came to a settlement with his three Engineers, Messrs. William Paxton, Thomas F. Purcell, and William Willson, and ascertained the balances due them, for which I gave them drafts on the Second Auditor. Having no occasion for the services of all the Engineers engaged, I discontinued the employment of Mr. Willson, retaining the other two, at some reduction of salary as to one of them. Considerations of prudence induced the selection of the two Engineers retained; they had superintended the works on different parts of the line: one on the Bedford, and the other on the Amherst and Rockbridge shore: much of the work was so covered, that the quality or quantity could not be ascertained otherwise than by reference to the notes taken by the Engineers, (always best understood by those who made them;) and the many contingent provisions contained in the contracts were most susceptible of correct determinations from the information of those who were acquainted with all the facts connected with them.

On my first visit to the mountain section of the James river canal, I found some of the work finished, and most of it laid out and partially operated upon. Where this was the case, but little remained for me to do, more than to watch over the execution of the work, and see that it was finished in reasonable conformity with the original design. I expected to have found in the possession of the Commissioner, or the Engineers, an entire plan of this work, with directions as to the manner of its execution. But in this I was disappointed; the only information I could obtain being verbal statements, made from the recollection of those about the place, and in which they did not always agree. In this state of things, my own judgment, aided by the opinions of the Engineers, was often the only resource. In the progress of the work, unforeseen difficulties have sometimes arisen, and in some instances of a nature to render a change of the original plan or location indispensable. Difficulties of the latter character did not often occur, and in such cases I should have called in the assistance of the Principal Engineer, had he not been, at the time, so engaged in other parts of the State as to render it very inconvenient, if not impracticable, for him to have afforded such aid. In the exercise of my own judgment under such circumstances I have been governed by considerations of economy, having due regard to the utility and durability of the work. The departures from what was said to be the original design, have in no instance added to the public expense, nor has the value of the work been, in any way, diminished by changes in the plan. During the spring, summer and autumn, the contractors were severally engaged in the execution of their several contracts, and the Engineer and assistant Engineers constant in their attendance, watching over and directing the execution of the work. That portion of the work contracted for by Messrs. John and Robert Gamble being in the greatest state of forwardness, the Engineer and assistant Engineer proceeded, in the month of October last, under my direction, to the measurement thereof, and ultimately to the measurement of all the work embraced by the several contracts as completed. In making this measurement which was to form the basis of a final settlement, care was taken to re-measure all the work, except such parts as could not be come at, and in relation to which a reliance on notes previously taken was unavoidable. Before the measurement and examination was complete, and before the water had been let into the canal, Messrs. J. and R. Gamble claimed, under the terms of their contract, that the work should be received and they exonerated from further liability. This being refused, they addressed to me the note herewith submitted, marked C; to which I returned the answer herewith submitted, marked D. They ultimately waived this claim, and the water was let into the canal. A few leaks were discovered, which they repaired in a few days, and rendered the part of the canal embraced by their contract as tight as any new work of the kind could be expected to be. Other difficulties which arose in the settlement with them were finally surmounted, and on a close of the settlement there appeared to be due them $ 35,631 62, which was immediately liquidated by my draft on the Second Auditor. This sum, added to $ 118,449 96, which had been previously paid to Messrs. J. and R. Gamble, gives the sum of $154,081 58 cents, which is the total cost of the work executed under their contract. In the work executed under this contract, there is a neatness and symmetry which reflects much credit on the contractors, and it is hoped that its durability and tightness will equal its appearance. The work contracted for by Messrs. Lyman and Sandford Brown, in the county of Bedford, was next completed, and being carefully measured and calculated according to their contract, there appeared to be due them, on a final settlement, a balance of $19,363 69, which was paid by a draft on the Second Auditor. This sum added to $ 67,663 82, previously paid to Messrs. L. and S. Brown, gives the sum of $ 87,027 51, which is the total cost of the work executed by them. This part of the work is as tight as new works usually are; it appears to be strong and substantial, with the exception of the lower locks, which are constructed with timber, and do not, therefore, promise to be as durable as might be wished; but as the Engineers were of opinion they could not be rejected, they were received and paid for as above stated. The balance of the work on this section of the canal was contracted for by Messrs. Jordan and Irvine, and was supposed to have been completed; but on letting in the water, some leaks were discovered in those parts of the canal where there was deep filling below the bottom, owing to the lining and puddling not being of sufficient thickness, or the clay used of sufficient compactness. The contractors immediately went to work to remedy this defect, and would have done so in a few days but for the severity of the weather about Christmas. These leaks are not of a character that indicates any want of strength in the work, or that threaten any immediate breaches—they may be removed, and the canal rendered tight with very little labour. Believing it desirable to furnish the Legislature with a complete estimate of the actual cost of this work, I caused a measurement and calculation to be made of that part of it embraced by the contract with Messrs. Jordan and Irvine, and went into a settlement with them. The points of controversy which arose in the progress of this settlement were numerous;—they were all, however, finally adjusted, and a balance found in favour of these contractors, on the completion of their contract, of $26,861 25, which added to the sum of $81,967 79, previously paid them, gives the sum of $108,829 04, as the total cost of the work embraced by their contract. In part payment of the said sum of $26,861 25, Messrs. Jordan and Irvine received two drafts on the Second Auditor amounting to $21,861 25, leaving as yet unpaid the sum of $5,000. This balance of $5,000 it was agreed should be retained until the work should be completed agreeably to contract; and a new covenant was entered into by the said contractors, binding themselves to proceed without delay to its completion, and no doubt is entertained, from the known character of these gentlemen, that the work will be completed in the shortest time possible, which it is supposed will not exceed ten days. The three contracts above mentioned embrace the entire mountain section of the James River Canal, a distance of upwards of seven miles, from the North river in the county of Rockbridge, to the Piney Island, where it enters the river from the Bedford side; and the aggregate cost under said contracts may be summed up as follows, viz:

Expended under contract with John and Robert Gamble,	$154,081 58
Ditto under ditto with Lyman and Sanford Brown,	87,027 51
Ditto under ditto with Jordan & Irvine, (including the sum of $5000 retained as aforesaid,)	108,829 04
Amounting in the aggregate to	$349,938 13

The bridge across James river, for the towing of boats, from the termination of the canal on the Amherst side to its entrance on the Bedford shore, is not yet completed, but it is in a state of forwardness which authorises the expectation that it will be finished in a few days. This bridge will cost about $4,000. A house for an officer, and the residence of the receiver of tolls on this section of the canal, has been contracted for at the price of $ 1,000, and a house for the residence of one of the lock-gate keepers, at the price of $ 300. These houses are not expected to be completed before the month of May next; but no very material inconvenience will result from the delay, as there are inferior houses on the canal that may be occupied until those contracted for are finished. The receiver of tolls and gate-keepers are now at their posts, ready to put the canal into operation, as soon as the leaks in the section of Jordan & Irvine are stopped, and the water let in. The towing path, on the margin of this canal, presents an excellent way for the traveller through the mountain, which is already much used, and will be more so in process of time. A moderate toll on the use of this path by travellers, would yield a considerable revenue, and it is respectfully submitted to the General Assembly whether reason and justice do not require the imposition of such tolls.

So little remains to be done, that this section of the James River Canal may now be regarded as finished, and reasonable hopes are entertained that it will prove to have been well executed. But, the works are all in a green state, and will require considerable care and attention, for a few years, till the embankments shall become more compact and firm. The embankments, in many places, are of light and sandy materials, and will require to be re-built; and the towing path, in many places, will require gravelling; other leaks may be expected to appear, and, in such case, it will be important that a sufficient force should be at hand to repair the breach immediately, before the mischief becomes extensive, or the navigation materially interrupted. It is, therefore, respectfully submitted, that the employment of eight or ten hands, under a judicious overseer in repairing and strengthening the weaker parts of the work, and to be in readiness promptly to repair any breaches that may happen, would bé a measure of prudence and economy.

The damages awarded to the proprietors of lands on the line of this improvement, are considered in most cases high, and in some excessive. Where they were small in amount, they have been paid, from a disposition to avoid litigation. In the case of Mr. Peter Salley, $400 was awarded to him, although it is not perceived that one acre of his land is taken or overflown. The damages I refused to pay for the reasons assigned in my note to him which is herewith submitted, marked E, and submitted to him the proposition contained in the same note, to which he has not thought proper to return any answer. In the case of Mr. Joseph Glasgow, $150 was awarded to him, for injury to a spring not near his residence, the payment of which was also refused, and a proposition was submitted to him of the same import with the one made to Mr. Salley. Mr. Glasgow accepted the proposition made to him, and new Commissioners were appointed, who awarded him $75, (one half only of the sum before awarded;) but, on exceptions by him to the new award, it has been set aside by the county court of Rockbridge.

The completion of the mountain section of the James River Canal, having removed one of the greatest obstacles to safe and easy transportation in the commercial intercourse between the east and west, it is respectfully submitted to the General Assembly, whether the comparatively small additional expenditure necessary to afford the facility of a safe and easy navigation from this section of the canal to Covington, is not required by a wise policy, as well as by economy in the public expenditures. There is here a chasm in the line of communication between the eastern and western parts of the Commonwealth, which forms, as long as it is permitted to exist, an insuperable barrier to that free commercial intercourse so ardently desired by all, and which is perhaps not less interesting in a political than in a commercial point of view. The expense of improving the navigation of this part of the river, would bear no proportion to the increase of tolls that would result from making the improvement, and hence, economy alone would seem to urge us to a speedy execution of the work.

It may be proper here to remark, that the tariff of tolls on the mountain section of the canal, is exceedingly multifarious and complicated, and is productive of the same inconveniences, delays, and vexations, which induced the Legislature, at its last session, to modify the tariff of tolls on the lower section of the canal. The same reasons exist for the interposition of the Legislature in simplifying the tariff on the mountain section. It is now the duty of the Commissioner of the Kanawha Road and Navigation, to settle the accounts of the receivers of tolls on that road, and to receive and pay over the money by them collected. On account of the remoteness of the mountain section of the canal from the Seat of Government, it is respectfully submitted, whether it would not be expedient to subject the receiver of tolls on that section of the canal, to a similar mode of accounting quarter yearly. Permits granted by the receiver of tolls, specifying the articles and amount of toll, to be delivered by the boatman to the gate-keepers, and by the gate-keepers to the Commissioner, would check the accounts of the receiver of tolls, and furnish proper data for quarterly settlements.

On the 8th of May last, the Engineer, Maj. Staples, left the Balcony falls under my instructions, to inspect the improvements on the Kanawha road and river, and put the road under the operation of the Act of the 1st of March, 1826, in respect to tolls, which was done on the 15th of May, 1826. The tolls received down to the 15th of May, 1826, were collected, and a statement thereof is herewith submitted, marked F. The Engineer was directed to examine the condition of the road, to contract for small repairs of pressing necessity, and report generally as to its condition; which was accordingly done, and his report was laid before the President and Directors of the James River Company, to whom the law had entrusted the subject of repairs. The President and Directors of the James River Company, taking into consideration the subject of repairs, by their resolution of the 28th June last, authorised the Commissioner to contract for such repairs on the road and bridges, as in his opinion might be necessary, not exceeding in amount the tolls received on said road. In the month of August last, I visited the whole of this line of improvement, and having examined the road with much care and attention, concurred with the Engineer in most of his views in relation to it. Having ascertained from personal examination, aided by the views of the Engineer, the nature and extent of the repairs on the road deemed necessary, I entered into a contract with Mr. Francis Carrol, to make them. By the terms of this contract, the contractor is bound to repair and build up the banks and walls that had given way, to restore the road to its designated width, taking the materials for that purpose from the adjacent banks or hills, so as to place the road in some degree, on firmer ground; to repair the culverts and gutters, and put the road in complete repair, and keep it in such repair till the month of November; for which, he is to receive fifteen hundred dollars, as will appear by the contract on file, in the Second Auditor's office. A small part of the road near Sewell mountain, and on Meadow river, passes over wet and spongy soil, and cuts up very much in the winter season: it may answer for the *present* trade on the road, but if it is increased, this part of the road should be gravelled or paved. Most parts of the road will need considerable attention and repairs for a few years, until it becomes more firmly based; and when this object is attained, it will be an excellent road. The propriety of letting out the repairs on this road for a *term of years*, is respectfully suggested: under such a system, the contractor would fix himself upon the road, with a suitable force and tools, and feel an interest in making his repairs of a permanent character. That part of the road below Montgomery's ferry, contracted for by Smiley and [illegible], has been finished and paid for, and is believed to be the best executed contract on the line. The bridge over Greenbrier river, and the toll-house at the same place, have also been received and paid for. This bridge is, (as that over Gauley river was, before its recent destruction,) an object of admiration with every traveller: it is a fine specimen of architecture, which reflects much credit on the contractors. These bridges were of similar construction; the abutments and piers of hewn stone, and the whole extent of the bridges (about 500 feet) covered with neat frame work and painted. They cost upwards of $18,000 each. The cost of each was increased [illegible], in consequence of hewing and dressing the stone, and about $1,000, by reason of covering and painting. This, [illegible] country, is perhaps paying too dearly for ornament. Plain substantial bridges, with abutments and [illegible] masonry, it is believed, might be constructed for [illegible] cost of these. On the night of the 11th of July [illegible] the incendiary was applied to the Gauley [illegible] few minutes, that beautiful fabric was reduced [illegible] abutments and piers still remain with but little injury, and about $200 worth of irons were saved from the timbers. The supposed perpetrators of this diabolical deed, were taken into custody by the civil authority, tried, and convicted, and are now suffering the penalty of the law. The rebuilding of this bridge was not thought to be within the powers of the Commissioner, and the subject was, therefore, referred to the consideration of the President and Directors of the James River Company, who declined taking any steps until the legislative will shall be expressed. To re-build, according to the original design, will not cost less than $10,000; a substantial straight or chain bridge, without covering, may be built for about two-thirds of that sum. Covered bridges are very combustible, and liable to conflagration; and there are too many evil disposed persons willing to apply the torch. The destruction of the bridge at the mouth of Gauley, rendered some temporary arrangement for crossing the river necessary. A contract was consequently made with Mr. Miles Manser, who had acted as receiver of tolls at that place, to furnish boats and a competent number of hands at his own expense, for the expeditious conveyances of travellers across the river at that place, for the consideration of one third of the tolls there received, as shewn by the contract, bearing date the 15th of August, 1826, and herewith submitted, marked H. On the 21st of August last, Mr. Hugh M'Laughlin was appointed receiver of tolls at the Greenbrier bridge. Much inconvenience is experienced by the poorer class of persons on this road, who are obliged to travel it to and from their mills, which are scarce in some parts of the country; it sometimes happens that the toll they pay on the road, will exceed the value of the grain carried to the mill; some legislative provision for the relief of such persons, is submitted to the wisdom of the General Assembly. Some of the toll-gates on the road are so situated, that roads around them may be made, so as to evade the payment of tolls. To remedy this, a power should be given to the Commissioner, to remove such gates to some place better calculated to ensure the collection of tolls. At present there are six toll-gates on the Kanawha road, and the distances between them very unequal. Between the gate at Christ's and that at Metzaker's, the distance is upwards of 40 miles; another placed between them, about equi-distant from the two, is considered desirable. What is called the old State road, from Lewisburg to the Falls of the Kanawha, opened under Act of Assembly, is yet continued open. In many places, this old road crosses the Kanawha turnpike road, and in others it runs for miles parallel with it, and but a short distance from it. This road should be put down by law, as it affords great facilities in evading the payment of tolls, and has already proved prejudicial to that source of revenue. The first quarter year, within which tolls on the Kanawha road were collected under the Act of the 1st March, 1826, ended on the 15th of August last. The tolls for that quarter were collected and paid over as the law directs; a statement thereof is herewith submitted, marked F. This may be considered the most unfavorable quarter for the receipt of tolls, as there is but little travelling, and no stock driven at that season of the year. Another quarter expired on the 15th November last, and Major Staples has gone out and received the amount due on the accounts of that quarter; the amount will be found on the paper marked F. This collection has been delayed by the settlements that were going on at the mountain section of the canal, there being no one who could be conveniently spared from that station, till those settlements were completed. This quarter is found more productive than the preceding one, and the next may be expected to equal this, as a considerable quantity of stock is understood to have passed on the road during the past season.

The report of J. C. Warren, Engineer on the Kanawha road, herewith submitted, marked I, shews the present condition of the road, and the repairs and improvements made by Carrol, under the contract with him, above referred to. This road is of importance to the country through which it passes, but is far short of what it should be. It may be said to be a road *in* a wilderness, which brings you to neither side. From Lexington to Covington, (a distance of 45 miles by the present road,) the route is impracticable for loaded waggons: on reaching Covington, a fine road presents itself, with which the traveller is delighted, until his course is impeded by the abrupt termination of the turnpike below Montgomery's ferry; and here he asks himself why should this great State improvement terminate at this place? From this termination of the turnpike road, to the Kanawha Salt-works, is about 24½ miles: from thence to Charlestown, 1¾ miles: thence to the mouth of Guyandotte, on the Ohio, 48 miles: thence, on the margin of the Ohio, to the mouth of Big Sandy river, 12 miles: and, over this route, only carriages with light loads, and men on horse-back travel. The extension of the Kanawha turnpike could not fail to increase greatly the value and utility of that which has been completed. As soon as extended to the Ohio and Lexington, a line of stages would be run on it; and the traveller from the south and west, quitting the steam-boat on the Ohio, would find a stage ready to take him by the shortest route to the east, and on reaching the valley, might shape his course in any direction he pleased to travel. And, if the road were extended, by the most direct practicable route, to the City of Richmond, (the Metropolis of the State, and seat of government,) the distance to the western States would be shortened nearly one hundred miles, by a better road than has ever been opened between the east and west. With such advantages, can it be doubted that this central route would become the great thoroughfare between the east and the west? What is there, then, to deter the Commonwealth from the execution of this interesting improvement? The whole distance to be improved is about 200 miles, and may be estitimated at from 800 to 1000 dollars per mile, and the total cost at about 200,000 dollars. The necessary funds may be obtained on the credit of the State, by a loan, redeemable at pleasure; and there can be no doubt that the income from tolls would meet the interest, and gradually extinguish the principal. In the execution of works of such magnitude, neither the means nor the credit of individuals can be relied on; and if they were adequate to such objects, the State ought not to place her great lines of internal communication under the control of individuals. A *part* of this improvement being already completed on State account, and held as State property, it would seem, on that account, to be peculiarly fit and proper, that the *whole* of it should be executed in the same manner, and held as State property, free from the embarrassments and inconveniences that might result from a part of the same line of improvement being vested in and under the control of individuals. I might enlarge much upon the many commercial and political benefits to be derived from prosecuting the suggested improvements, but they are believed to be such as cannot fail to arrest the attention of all reflecting men. In the execution of the works above suggested, it is believed this Commonwealth has a deep interest; and, if the Legislature concur in this opinion, they cannot act with too much promptitude and energy in their accomplishment. Delay and procrastination in a matter of such vital interest to the State, must expose us to the imputation of a culpable neglect of that interest, and inexcusable indifference towards the blessings of a good Providence. Give extension to the Kanawha road, as suggested, and improve the navigation from the mountain canal to Covington, and Virginia will receive a new impulse. Her population will no longer flow to the west and south. Her fertile lands west of the Alleghany, and on the waters of the Kanawha, which are now in the forest, and have much to recommend them, will be reduced to cultivation, and become the residence of a dense and valuable population; and the "*Old Dominion*" would no longer look on with folded arms and see her sisters in the Union passing by and out-numbering her in rapid succession. It would be the commencement of a new era in her political history, put a stop to her retrograde march, and cause her to be respected both at home and abroad. A new commercial intercourse would spring up between the east and the west, which would bind them together by the strong ties of common interest, sentiment and feeling, and give strength and stability to the body politic. The statesman, therefore, who identifies himself with the internal improvement of his country, leaves behind him the most interesting monuments of his wisdom.

A report on the probable cost of an extension of the Kanawha road to the mouth of Guyandotte, prepared by J. C. Warren, Engineer on the Kanawha road and river, is herewith respectfully submitted, marked J.

In the month of August last, I visited the Kanawha river; and, accompanied by the Engineers, J. C. Warren and J. Staples, examined the works then done and in progress; to the execution of which no material objection was discovered. These works will be completed the ensuing summer, and when done, will afford a good navigation for boats drawing three feet water, from Charlestown to the mouth of the river. The placing of buoys near the channels, and ring-bolts where wanted, would be of great advantage in the navigation of this river; but the authority to do this, if approved, must be derived from the Legislature. Mr. J. C. Warren, the Engineer, having recently visited the works on this river, and reported on them pretty fully, I beg leave to refer to his report, which is herewith submitted, marked K, for the detail of information it contains. As the collection of tolls should commence on the completion of these works, it becomes necessary to provide suitable regulations on this subject during the present session of the General Assembly. During the winter and spring tides of this river, boats descending may pass in defiance of the receiver of tolls. To remedy this, an office should be designated, where all boats used in the navigation should be registered, the owners of the boats made responsible, and all unregistered boats subjected to seizure, with such other regulations as the wisdom of the Legislature may devise. It is believed that the Red-house shoals is the most suitable place for the collection of tolls, and at that place boats must pass more under the power of the officer for the collection of tolls, than at any other.

The statement hereto annexed, marked L, shews the amount of drafts, and payments made by your Commissioner, to amount to $ 163,481 00½.

And the paper marked M, hereto annexed, shews the probable sums that will be necessary to close the contracts now in execution on the mountain section of the James River Canal, and on the Kanawha river.

All of which is respectfully submitted.

DAVID S. GARLAND, *Commissioner*
of the Kanawha Road and Navigation.

I.

Report of the Engineer of the Kanawha Road and Navigation, on the Kanawha Road.

All the turnpike authorised to be made in this quarter, is finished: it extends six miles below the Falls of the Kanawha: its whole length is one hundred miles.

Francis Carrell went on well with the repair of the road from the Falls to Covington: until the end of October, the part on which he had worked, was in good order; at that time the weather became rainy. The number of hogs and heavy laden waggons which have travelled it since, have deranged the part recently repaired, and which was unsettled, and have also cut up and rendered difficult to pass, several places which are made of earths whose qualities render them unsuitable for roads, particularly at the Meadows, and some other glady spots, where the surface is a bog earth on a substratum of clay. About Sewell mountains and valley, where is a clay of the most ductile kind, fit for pottery; on the north side of several ridges on the west of Big Sewell, it is a rich vegetable mould. No form can be given to a road made of materials so absorbent and retentive of moisture, (unless it be capped with stone,) that will preserve it in a sound state in autumn, when evaporation is slow, if heavy loads be transported on it on wheels with narrow fellows, or if it be much travelled by herds of cloven-footed animals. Where ravines have been filled with light earth scraped from the neighbouring surface, and are continually receiving an increase of similar material, the rain bringing it down the wheel-ruts from the hill on each side, the road is also much cut. The past summer and autumn have been more dry than usual. There is no reason to expect these places will be better in future years, but rather that increased use will make them worse. When a considerable part of a commercial road is far inferior to the rest, the whole is depreciated nearly to the standard of the worst, as the load is restricted to what a team can draw over that part: The load of a six horse team is reduced about one third: from fifteen barrels of salt to ten. Whilst parcels of the road, equal in the aggregate to about ten miles, require capping, other parts of it, amounting to about thirty miles, are composed of materials so solid as never to require more than a slight repair. When the road was finishing, a part of it through the meadows was considered incapable of being made with the earth fit for use. The Otter creek meadows, and the worst part of that on the Meadow river, were paved sixteen feet wide, fifteen inches deep in the middle, and twelve inches at the sides, which are secured by white oak logs laid lengthwise, where the ground was marshy, as well to prevent the pavement spreading and working into the ditches, as to defend the road from the torrents which find a way along the ditches [illegible]. This has made a road very firm at all times, but [illegible]. As the places which now require capping, have [illegible] and are not exposed to severe washing, it is thought a [illegible] less expensive plan will answer the desired purpose. It is proposed to dress those parts intended to be [illegible] in May, and leave them exposed to the sun and [illegible] August, when they will have acquired all the [illegible] they are susceptible, and then lay on a stra[illegible] twenty feet wide, of stone broken [illegible] and in autumn, when the heavy laden [illegible] possibly may, in the softest [illegible] until the whole becomes solid, [illegible] that no water can lodge on any part [illegible] be about 1600 dollars per mile.

[illegible] is a very indifferent sub[illegible] the bed of the river is rocky, and the [illegible] width of the boat: when the [illegible] it is difficult to take over [illegible] and when there is any considerable rise [illegible] in the river, as it generally precedes that in New river, it runs with such force that it is impracticable to cross. The burning of the superstructure has not materially injured the abutments and piers: only those parts of them which were in contact with the fire, have splintered. Should the bridge be re-built, it will be prudent to defend the piers from the ice, which, at the breaking up of winter, and the heavy drift timber, which in freshets are driven against them with such force as to have occasioned the shock to have been felt by persons standing on the bridge.

The expense of re-building the bridge, and defending the piers, will be about	$10,000
Paving ten miles of road, as proposed	16,000

Respectfully submitted.

J. C. WARREN, *Engineer*
Kanawha Road and Navigation.

November 22d, 1826.

K.

Report of the Engineer of the Kanawha Road and Navigation, on the Improvements making on the Kanawha River.

Messrs. Epley and Morrison, the contractors on the lower section, commenced working in 1824, at Red House shoal, and also at Arbuckle's bar in the 79th mile, the lowest point on the river at which any improvement was necessary, according to Thomas Moore's report. They have progressed to the foot of Tyler, in the 41st mile. Except Red House, the improvement of the shoals has been nearly similar; sluices having been made forty feet wide, three feet three inches deep through the bars of rock and gravel, of which they are composed. With the large stones which it has been necessary to remove, jetties have been formed to equalize the descent of the water. Where the bed of the river was favourable, jetties have been placed below the shoals, which by lengthening the plane, raising the water a few inches and interposing a pond, have abated the velocity which the water would have acquired in an uninterrup-

ted descent. In the 53d and 75th miles are sheets of rock across the bed of the river, on which it has been necessary to raise the water a few inches by jetties.

As many men have been employed at the Red House as could work advantageously. It is finished recently. The sluice is on the right side of the river, excavated in part through a bed of sand-stone, the remainder through compact marl so hard that much of it required to be blasted; its length is one hundred and four rods, the width at the head forty-one feet, at the lower end forty feet: in order to ensure an ample depth throughout, at the head when the water in the pond above should be drawn down, as it must be by opening so large a drain in addition to the former outlet, and the accelerated velocity should diminish the volume near the lower end, the head was made to terminate where the water was four feet deep at low water. The river having been dammed off, the bottom of the sluice has been sunk to that depth, and graduated with a descent of two inches and one quarter in six rods for the fifty two rods next the head, and two inches in six rods for the lower fifty two rods. Where the rock gave out, the sides have been walled: on the right is a towing path laid with flag stones. On opening the sluice, the water in the pond above fell three inches, the additional foot in the width, and the six inches surplus in depth, with what flows in at the side over the sloping rock near the head, maintain the required depth near the foot.

The velocity of the current in the sluice is in	fifty-two rods near the head,	two miles 140 rods	per hour.
	fifty-two rods lower end,	four miles 106 rods	
	throughout the sluice,	three miles 38 rods	

This sluice has very much improved the navigation, particularly the ascending. Heretofore boats were always obliged to procure assistance to get up, now by the use of a tow line the crew ascend without much difficulty: descending boats are sometimes run aground on shallow places near the channel, both above and below the sluice, with which the boatmen are unacquainted: when buoys shall be placed on these, the benefit to the descending will be equal to the ascending.

Between Arbuckle's and Knob shoal, distant six miles, were impediments, called by the boatmen Potatoe Hills: they are detached rocks of various sizes scattered promiscuously over the bed of the river: the refluent water caused by the Ohio has occasioned sand to collect around them, interspersed are beds of gravel: a similar section extends from the Peeled Maple bar to near Tyler, a distance of four miles: shorter patches have been found in several places. Passing in a boat only the more prominent of these rocks arrest the attention; they are not supposed to be numerous, but in making the channel when it is necessary to remove every one that is not *entirely* three feet three inches beneath the surface of the water, the fallacy is detected: several thousand have been removed: generally they have been deposited in rows seventy or eighty feet asunder, leaving the channel between. When the river is low, and the weather calm, the small ripples which they cause in the water enable experienced watermen to steer safely, but a breeze sufficient to ruffle the surface or a swell in the river insufficient to float a boat over them, deprives the boatmen of this guide, and also of the beacons of rock which have been placed a few inches above water, with a view to assist them, leaving nothing by which to direct their course; consequently they are liable to get aground frequently. To remedy this inconvenience, it is proposed to place buoys at proper distances on the rows of rock and gravel which have been scraped up in making the channel, on rocks and gravel beds which are near it, on the jetties and near the extremities of the sluices. It will be necessary (except on a few insulated rocks where there is a channel on either side) to place them in pairs, one on each side of the channel: was only one placed, the wrong side of it might be taken. It is supposed the whole river will require three hundred.

Before Messrs. Epley and Morrison began to work at Arbuckle's bar, it was known that about three miles below, at the mouth of Thirteen Mile creek, there was a shoal which required improvement; this they refused to work at, on the plea, that their contract was founded on Thomas Moore's report, which did not specify any work to be done below the seventy-ninth mile; therefore, they were not bound to do it. In 1825, Col. Anderson, the Commissioner of the Kanawha Road and Navigation, told them, that if, on a fair construction of their contract, they were justly entitled to pay for this shoal as extra work, they would be paid for it. On this, they made a sluice. Whilst this was doing, it was discovered, that at the mouth of the Pond Gut, two miles lower, there was a gravel bank which was about four inches too high, for six rods, and at the mouth of Ten Mile creek, the point of a bar and a few rocks required removal: neither of these small jobs has been done.

The work which Messrs. Epley and Morrison have done, and the payments made therefor, according to their contract, are:

For the 79th, 78th, 77th and 76th miles,	$4,200	
75th, 74th and 73d miles,	3,500	
72d and 71st miles, -	4,000	
62d, including Red-House,	10,000	
56th and 55th miles, -	1,400	
53d and 52d miles,	4,000	
	27,100	
Deducting 15 per cent.	4,065	
	23,035	
Advanced, - -	4,000	
Amount paid,	27,035	
Remains to be paid,	14,097	
Amount of contract, - -		41,132
If the competent authority decides that they are to be paid for thirteen miles, &c. add,		1,000

The 46th, 45th, 44th and 43d miles, are finished. There remain for Messrs. Epley & Morrison to improve four shoals, viz: Island, Two Mile, Leonard Morris's, and Witcher's. When the first section of the river was finished, the water was too high and turbid to permit a satisfactory examination; the work was, therefore, received conditionally; colonel Anderson taking their obligation to do any thing which may be found necessary to make it conformable to contract. As a great quantity of fine gravel and sand is set adrift in working, and continually washing down stream, and will not be likely to get to a point of settled rest, until after several freshets, and the boatmen, when they get out of the channel, sometimes remove small parts of the work to regain it, there is an understanding with Messrs. Epley and Morrison, that at the end of the coming summer, when the upper shoals are finished, the whole work is to undergo a revision, accompanied by workmen and implements, to do any thing which may have been omitted or deranged. The work is undisturbed by the river, except the occasional shifting of fine sand near the sluices.

David Smiley, the contractor on the upper section, commenced working in 1824, at Cabin Creek shoal, in the 21st mile, at a ripple at the head of an island in the 19th mile, at Point Creek shoal, in the 16th mile, and at Childers' shoal, in the 11th mile. The Cabin Creek shoal, and that at the island, were finished. In the autumn, when Point Creek shoal was supposed to be done, a swell of several feet in the river prevented a satisfactory examination. It was therefore received conditionally; David Smiley giving to Colonel Anderson an obligation to do any thing further, which might be found necessary to make it conformable to contract. During the year 1825, the work on the upper part of the river was suspended. At the close of the year, David Smiley contracted to improve Elk shoal, by lengthening the sluice, and making it deeper and wider near the head, and by removing a dam which was across the left channel of the river, to lengthen the tow-path with the materials. This work has been executed during the past autumn. Boats now ascend the sluice with little difficulty. He has also worked on Childers', Levi Morris's, and Point Creek shoals, and supposes them finished. It is doubtful whether in Childers' there will be the required depth of water when the river is low: the graduation of the other two is not as it ought to be.

The whole amount of David Smiley's contract for the upper part of the river, was		$8,868 00
From which deduct for Loop shoal, $1,700; Long shoal, $668,	2,368 00	
And a part of the $1,500 advanced in the ratio of the payments to have been made for the work abandoned, $2,368, to the payments for the whole, $7,368,	482 85	
Value of that part which has been abandoned,		2,850 85
Value of the work to be executed by him,		6,017 15
Of which he has been paid for the 21st and 20th miles,	900 00	
19th mile,	700 00	
16th mile,	1,500 00	
	3,100 00	
Deducting 15 per cent.	465 00	
	2,635 00	
Advanced,	1,500 00	
		4,135 00

To be paid when the work is finished,	1,882 15
And for Elk shoal,	1,190 00
	$ 3,072 15

During the autumn, Colonel Thompson has done some work on Tyler shoal. The person engaged to superintend the work for him, having been laid up with a fever, it is not finished.

When the shoals shall be finished according to contract, and buoys placed on the objects which by their proximity to the channel, are liable to be run on, the descending navigation will be nearly as complete as it is practicable to render it by a channel forty feet wide and three feet three inches deep. To enable the horse boats to ascend, whose machinery is inadequate to force them up, and which being too unwieldy to be towed, must necessarily be warped, it will be expedient to place ring-bolts fastened firmly into large rocks, above the bars and shoals which they are unable to surmount, and about half-way from the lower end of the long sluices, in which the descent does not exceed three inches in one hundred feet. In the long sluices, where the descent is five inches in one hundred feet, it may be necessary to place them throughout: these last will be useful to heavy laden keel and large flat boats. The number required can be ascertained with precision, only by accompanying one of the best constructed horse-boats a trip up the river. It is conjectured, that about fifty will be sufficient. Many of them may be fixed in the rocks with the buoys. The expense will not exceed fifty dollars. It is supposed steamboats may ascend the sluices without difficulty.

Recapitulation of the sums necessary to close the contracts, and place the buoys and ring-bolts:

For Messrs. Epley and Morrison,	$ 14,097 00
David Smiley,	3,072 15
300 buoys, at $ 3 each,	900 00
50 ring-bolts,	50 00
	$ 18,119 15
Contingent on the work at Thirteen Mile creek, &c.	1,000 00

Respectfully submitted.

J. C. WARREN, *Engineer*
Kanawha Road and Navigation.

Kanawha County, Nov. 20th, 1826.

M.

A STATEMENT

Of money wanted to complete the improvement on the mountain section of the James River Canal, and on the Kanawha Road and River.

Jordan and Irvine, retained,	$5,000 00
Balance for bridge,	2,000 00
Toll-house and gate-keeper's house, balance,	1,000 00
Peter Salley, dam. (if paid,)	400 00
Joseph Glasgow, dam. (if paid,)	75 00
Henry Kiger, gate-keeper,	25 00
Ditto, dam. in Rockbridge,	100 00
	8,600 00
Epley & Morrison, to complete their contract on the Kanawha river, (when completed,)	14,097 00
David Smiley, to complete his contract on the Kanawha river, (when completed,)	1,882 15
Buoys and ring-bolts, (if authorised,)	1,000 00
Extra work, and contingencies on Kanawha river,	1,000 00
	$26,579 15
Officers' salaries, and contingencies,	000 00

STATEMENTS

Relating to Surveys, Subscriptions and Loans, communicated to the General Assembly by the 2d Auditor, 7th December, 1827.

I.

SURVEYS AND EXAMINATIONS.

LIST OF ALL SURVEYS MADE BY THE PUBLIC ENGINEER,

Shewing the years in which they were made, the expenses of such Surveys, as far as they can be ascertained, and by whom those expenses were paid.

Year.	*Surveys.*	*Expense.*	*By whom expenses were paid.*
	By Loammi Baldwin, *Principal Engineer.*		
1817.	Survey of the Rappahannock and Rapidan rivers, for the purpose of ascertaining the practicability of rendering those streams navigable. (*By resolution of Board of Public Works,* 14*th Febru-*		

	ary, 1817. *Principal Engineer's reports 30th May and 11th November*, 1817,) -	$387 97	Expenses paid by the Board of Public Works, but to be refunded, together with the compensation for the services of the Principal Engineer and his assistants, (1 month,) in the stock of the Rappahannock company.
1817.	Survey of the James and Jackson's rivers between the mouth of Looney's creek and the mouth of Dunlap's creek, - - - Survey of the Kanawha river, from the Great Falls thereof to its confluence with the Ohio river, Survey of a route for an artificial road from the mouth of Dunlap's creek on Jackson's river to the Falls of the Great Kanawha. (*By resolution of Board of Public Works, 16th December*, 1816. *Principal Engineer's report, 29th November*, 1817,) - - -	1303 86	Expenses paid by the Board of Public Works.
1817.	Survey of the route for a canal for connecting the waters of the Roanoke and Appomattox rivers. (*Resolution of Board of Public Works, 6th*		

Year.	*Surveys.*	*Expense.*	*By whom expenses were paid.*
	November, 1817. *Principal Engineer's report, 2d March*, 1818,) - - -	Amount not known.	Expense paid by the Corporation of Petersburg.
1818.	Survey and examination of the James river from Rocketts to Warwick, and digesting the plans and details of the Richmond dock. (*Resolution of Board of Public Works, 28th January*, 1818. *Principal Engineer's report, 20th March*, 1818,)	Amount not known.	Expense paid by the Richmond Dock Company, except the compensation for the services of the Principal Engineer, (for a fortnight,) which is still due.
1818.	Survey of a route for a contemplated canal from Goose creek to Alexandria. (*Resolution of Board of Public Works, 6th November*, 1817. *Principal Engineer's report, 5th May* 1818, *not published with proceedings of Board*,)	Amount not known.	Expenses paid by the Alexandria Canal Company.

	By THOMAS MOORE, *Principal Engineer.*		
1818.	Survey of James river and its branches, North river, (above the Blue Ridge,) and the Rivanna river. (*Resolution of General Assembly, 25th February*, 1818. *Principal Engineer's report, 31st December*, 1818,) - -	2665 17	Expense paid by the Board of Public Works.
	By THOMAS MOORE *and* ISAAC BRIGGS, *Engineers.*		
1819.	Survey for a canal on the south side of James river, from Westham to tide water. (*Resolution General Assembly, 9th March*, 1819. *Principal Engineer's report, 29th January*, 1820,)		
1819.	Surveys to ascertain the best practicable communication between the waters of the James and Kanawha rivers, viz: James river, Kanawha river, Craig's creek, Sinking creek, Dunlap's creek, Ogley's creek, Howard's creek, Greenbrier river, and New river: Also,		
	For an independent canal along the valley of James river, and for a road from the mouth of Dunlap's creek to the Falls of the Great Kanawha river. (*Resolution General Assembly, 26th February,*		

Year.	Surveys.	Expense.	By whom expenses were paid.
	1819. *Moore and Briggs's reports, 14th and 19th January,* 1820,)	$7800 22	Expense paid by the Board of Public Works.
	By Thomas Moore, *Principal Engineer.*		
1820.	Examination of the Pamunkey river and its principal branches, North Anna and South Anna rivers, with a view of rendering them navigable. (*Resolution General Assembly, 2d February,* 1819. *Principal Engineer's report, December,* 1820.)		
1820.	Survey of the Monongalia river and its branches. (*Act General Assembly, 10th March,* 1819, *chap.* 50. *Principal Engineer's report, December,* 1820,) - - - -		
1820.	Examination of the Potowmac and its waters, and of the country between them and the Ohio river, with a view to a communication by a canal. (*Resolution General Assembly, 8th January,* 1820. *Principal Engineer's report, December,* 1820,)		

1820.	Examination of New river, to ascertain the nearest navigable points between it and the North fork of Holstein, and the nearest navigable points between said New river and Roanoke river. (*Resolution General Assembly, 8th January,* 1820. *Principal Engineer's report, December,* 1820,)		
1820.	Examination of the Middle and North fork of the Holstein river, with a view of improving the navigation of the said river. (*Resolution General Assembly, 7th January,* 1820. *Principal Engineer's report, December,* 1820,) -		
1820.	Examination of the Chickahominy river, with a view to the improvement of the navigation thereof. (*Resolution General Assembly, 24th February,* 1819. *Principal Engineer's report, 20th January,* 1821.) Whole expense of 1820,	$ 1383 66	Expense paid by the Board of Public Works.
1821.	Survey of a route for a canal to connect the waters of the Appomattox and Staunton rivers; and examination of the Appomattox from tide water to Farmville. (*Act of General Assembly, 20th February,* 1819, *and Resolution General Assembly, 14th February,* 1821. *Principal Engineer's report, Dec.* 1821.) - -	Amount not known.	Expenses defrayed by the corporation of Petersburg.

Year.	Surveys.	Expense.	By whom expenses were paid.
1821.	Examination of the Little Kanawha from the Great Falls to its junction with the Ohio. (*Resolution General Assembly*, 11*th Dec.* 1820. ***Principal Engineer's report***, *Dec.* 1821,)		
1821.	Examination of Clinch and Powell's rivers from State line of Tennessee to the highest points susceptible of navigation. (***Resolution General Assembly***, *26th January*, 1821. ***Principal Engineer's report***, *Dec.* 1821,) - -	$721 21	Expenses paid by the Board of Public Works.
1822.	Survey of the Roanoke, Dan and Staunton rivers, with a view to a sluice navigation. (***Resolution Board of Public Works***, *15th Dec.* 1820. *I. Briggs' report*, *12th Feb.* 1823,) -	Amount not known.	Expenses paid by the Roanoke Navigation Company.
1822.	Survey of the Potowmac river, under the direction of the Commissioners appointed by Maryland and Virginia. (Before this survey was finished, Mr. Moore died. Mr. Isaac Briggs completed it.) (*Act 29th January*, 1821, *ch.* 62. *I. Briggs' report*, 23d *Jan.* 1823,) - -	1984 48	Expenses paid by the Board of P. Works. $1765 69 paid to the Commissioners, is included in the sum here mentioned.

By C. Crozet, *P. Engineer.*

1823.	Examination of Slate river to the highest practicable point of improvement. (*Act General Assembly*, 21st *February*, 1822, *ch.* 47. *Principal Engineer's report*, 16*th Dec* 1823,) -	$64 40	Expenses paid by the Board of P. Works. The compensation of two assistants ($1136 80) and extra expenses ($473 96) are not included in the expenses of surveys, &c. in 1823, here stated.
1823.	Examination of the South Branch of the Potomac, Great Cacapebon river; North river and Patterson's creek, with a view to their improvement. (*Resolution General Assembly*, 27*th Jan.* 1821. *Principal Engineer's report*, 16*th Dec.* 1823,)	198 06	
1823.	Survey for a road from Staunton to the mouth of the Little Kanawha river. (*Resolution General Assembly*, 29*th Jan.* 1823. *Principal Engineer's report*, 17*th Dec.* 1823, -	439 64	
1823.	Surveys for a road from Winchester to Romney and Winchester to Frankfort. (*Resolution General Assembly*, 4*th Feb.* 1823. *Principal Engineer's reports*, 17*th December*, 1823, and 29*th March*, 1826,) - - -	34 47	
1824.	Location of the canal at the Blue Ridge. (*Act of* 8*th March*, 1824. *Prineipal Engineer's reports*, 17*th Dec.* 1824, *and* 24*th June*, 1824, *and* 15*th January*, 1825,) - -	329 93	Expenses paid by the Board of P. Works.

Year.	*Surveys.*	*Expense.*	*By whom expenses were paid.*
1824.	New survey of James and Jackson's rivers from Maiden's Adventure Falls to the mouth of Dunlap's creek to ascertain the best mode of improvement, &c. (*Act of* 8*th March*, 1824. *Reports of Assis't Engineer and Commissioners*, 13*th Dec*. 1824; *of C. Crozet*, 1826,) -	$5713 42	Expenses paid by the Board of P. Works. Other expenses for examinations amounting to $421 19, were incurred in the year 1824.
1825.	Survey for a canal to connect the waters of the Appomattox with the South Branch of Willis's river, and also with Deep creek and Hudsmouth's creek in Powhatan county. (*Resolution General Assembly*, 8*th February*, 1825. *Principal Engineer's report*, 29*th March*, 1826,)	332 19	Expenses paid by the Board of P. Works. The salary of an assistant ($833 33 cts.) and expenses of a general nature ($99 60,) are not included in the sums stated in 1825.
1825.	Survey for a canal from Bosher's dam to Manchester. (*Resolution General Assembly*, 14*th February*, 1825. *Principal Engineer's report*, 1826,)	33 85	
1825.	Survey for a road from Romney to Clarksburg, from Clarksburg to the Ohio. (*Resolution General Assembly*, 15*th February*, 1823. *Principal Engineer's report*, 29*th March*, 1826,) -		

1825.	Survey for a road from Smithfield, (Pennsylvania,) to Morgantown, and from Morgantown to the Ohio. (*Resolution General Assembly*, 11*th January*, 1823. *Principal Engineer's report*, 29*th March*, 1826,) - - -	684 26*	Expenses paid by the Board of P. Works. The salary of an assistant ($ 833 33 cts.) and expenses of a general nature ($99 60,) are not included in the sums stated in 1825.
1825.	Survey for a road from Staunton to the State Turnpike at Callahan's. (*Resolution General Assembly*, 2*d February*, 1824. *Principal Engineer's report*, 19*th February*, 1826,) -	895 04	
1825.	Examination of Tygart's Valley river from the mouth of the West fork to the highest point susceptible of navigation. (*Resolution General Assembly*, 27*th January*, 1821. *Principal Engineer's report*, 19*th February*, 1826,)	*included above.	

Notes.—Nothing has ever been paid by any Company for the services of the Principal Engineer.

In settling the accounts of the Principal Engineer it has not always been the practice of the Board of Public Works to ascertain the exact time consumed by each survey or examination, or the precise amount of the expenses of each. It is therefore impracticable to comply strictly with the resolution of the House of Delegates calling for the "Expenses of each survey."

E. E.

J. BROWN, Jr. 2*d Auditor*.

December, 1826.

2.

LIST OF SUBSCRIPTIONS.

LIST OF ALL COMPANIES

To which any part of the public funds have been subscribed, or ordered to be subscribed, since the creation of the Fund for Internal Improvement; shewing the amount subscribed, the time when, and the conditions or terms of subscription. December, 1826.

Roanoke Navigation Company, $80,000, 7th March, 1818. "The said subscription to be upon the same terms, in all respects, with that of the State of North Carolina to the stock of the said company." (See Acts Gen'l Ass. 15 Jan. 1817, chap. 41: and 19 Feb. 1818, chap. 63.)

Dismal Swamp Canal Comp'y, $46,500, 21st June, 1818. "According to the terms and provisions of the act entitled, "An act to create a fund for Internal Improvement." "*Provided,* That nothing herein contained, shall place the stock of the State, upon any other or worse footing, as to dividends, than the stock of individual subscribers." (Act of Assembly, 20 Feb. 1817, chap. 42.) *The act authorised a subscription of* $64,000; *but* $46,500 *only was taken, which was the balance then unsubscribed.*

Monongalia Navigation Comp'y, $14,000, 22d June, 1821. "*Provided,* That no part of the capital stock of said company, subscribed for on behalf of the Commonwealth, shall be paid in, until three-fifths of the sum so required shall have been actually paid in on account of the individual stockholders of the said company." Four of the directors shall be appointed by the Board of Public Works. (Act 2d March, 1821, chap 57.) No terms respecting dividends, are stipulated. The previous acts of 19th Feb. 1818, chap. 67, and 10th March, 1819, chap. 49, (which were not acted on, as regards a subscription on behalf of the State,) directed the subscription authorised therein, to be made "In conformity with the provisions of the general act constituting a fund for internal improvement."

Richmond Dock Company, $62,500, 29th May, 1819. "Upon the terms recommended by the Board of Public Works, in their last annual report." (Act of 9th March, 1819, chap. 48.) These were, "The terms and conditions prescribed by the act creating a fund for internal improvement. (Annual report of B. P. W. Dec. 1818.) The act above referred to, authorised a subscription of $50,000 only; a subsequent act, (2d March, 1821, chap. 50,) authorised a further payment of $12,500.

Leesburg Turnpike Company, $33,600, 29th May, 1819. "*Provided*, That the Board of Public Works shall not be required to pay the instalments until the other stockholders shall have paid in equal proportions of their stock." (Act 4th March, 1819, chap. 77.) The Board of Public Works subscribed upon the terms directed by this act, which specifies no conditions in relation to dividends, but it appears from the terms of the application of the company for a subscription, that it was intended to be in conformity to the provisions of the act creating a fund for internal improvement.

Swift Run Gap Turnpike Company, $46,000, 29th May, 1819. "Pursuant to the provisions of the general laws governing the fund for internal improvement." (Act of 8th March, 1819, chapter 80.)

Fallsbridge Turnpike Company, $24,000, 18th Dec. 1819. "Upon condition that the Fund for Internal Improvement, be allowed to participate in proportion to its stock so taken, in all dividends to be declared by the company from the passing of this act." (Act 7 Jan. 1820, ch. 77.)

Fallsbridge Turnpike Company, (payable in four semi-annual instalments, commencing 1st July, 1827,) $8,000, act accepted by the company, 29th May, 1826. "According to the provisions of the 11th section of the act to create a Fund for Internal Improvement," passed 5th of February, 1816. "*Provided*, That the subscription be exclusively applied to the completing of that part of the road which remains unfinished." "That the Fund for Internal Improvement, shall participate in the dividends hereafter to be declared by the said company, in proportion to the stock held by the Commonwealth: and the stockholders consent to the appointment of two directors by the Board, to represent the State's interest in said company." (Act 22d February, 1826, chap. 68.)

Upper Appomattox Company, (payable in three equal annual instalments,) $15,000, subscription not made. "*Provided*, That nothing herein contained, shall place the stock of the State upon any other or worse footing, as to dividends, than the stock of individual subscribers." (Act of 21st Feb. 1820, ch. 60.) The act of 3d March, 1821, chap. 52, suspends the above proviso for five years, "during which time, the dividends on the stock, directed to be subscribed by the Board of Public Works, by the said act (of 1820,) shall go exclusively to the original stock of the said company, including the stock heretofore held therein by the Commonwealth." The company have declined enlarging their stock, unless the shares are taken agreeably to the rule fixed by the 12th section of the act creating the fund."

Ashby's Gap Turnpike Comp'y, (payable half on the 1st Feb. 1827; the other on the 1st Feb. 1828,) $14,000, not yet subscribed. "Upon the terms and under the restrictions prescribed by law." (Act 10 Feb. 1820, chap. 68.) This act was never carried into effect, the company having declined building a bridge, which the subscription was to enable them to do. The act of 7th Feb. 1825, chap. 53, which *was* acted on, authorises a subscription of 140 shares, ($14,000,) "*Provided,* That the Board of Public Works shall have the appointment of two directors to represent the State's interest in the said company." It appears from the petition of the company, and the proceedings of the Board of Public Works, (20th Dec. 1824,) recommending the subscription, that the State is to be admitted "into an immediate participation of the tolls, from the time of making payment," if the company accepts the subscription.

Snicker's Gap Turnpike Comp'y, $20,000, 29th Jan. 1823. "*Provided,* That previous to such subscription, satisfactory evidence shall be given to the said Board, (of P. W.) that the money subscribed, shall be exclusively applied to improvements on the said Turnpike road, and that the creditors of the said company assent to such application. And *provided* also, that the Fund for Internal Improvement be allowed to participate in proportion to its stock so taken, in all dividends declared by the company, from the time of paying the 1st instalment." (Act 27th February, 1822, chapter 56.)

Cartersville Bridge Company, $5,000, 22d June, 1821. "So soon as the James River Canal shall be completed as far as Cartersville, the said company shall make a road from the said bridge to the canal, such as is described in the general law relating to Turnpike Companies." (Act 3d March, 1821, chapter 51.) No stipulations respecting *dividends* are to be found in the papers or proceedings of the Board of Public Works, or in the Act of Assembly.

Fauquier & Alexandria Turnpike Comp'y, $30,000, 14th July, 1824. "*Provided*, The sum so subscribed, shall be exclusively applied to the making and paving of that part of the road *not* already paved. *Provided also*, That the said company prove, to the satisfaction of the Board of Public Works, that the twenty miles of road already paved, is in good order, and finished according to the provisions of the act incorporating said company, and that the Fund for Internal Improvement participate with the company in all dividends, (on any section being finished) in proportion of the expenditure on said section to $52,300, and shall fully participate with the company in all dividends which shall be declared on the whole stock in the proportion which 30,000 dollars bears to 52,300 dollars, from the time when the last instalment of the said 30,000 dollars shall become payable." It is also enacted, "that it shall be the duty of the Board of Public Works, from time to time, to appoint three directors to represent the State's interest in the stock of said company." (Act 13th January, 1823, chapter 55.)

Fairfax Turnpike Comp'y, $5,400, 160 *shares*, July 14, 1824. "*Provided*, That the stock yet due to the said company, be secured by bond with ample security, residing within the State, and the Board of Public Works shall not be required to pay the aforesaid instalments until the stockholders in the said company shall have paid in equal proportions of the stock remaining unpaid. *And provided also*, That the Fund for Internal Improvement, shall participate in the tolls received on the road from the time the last instalment is made payable, and shall have the right to appoint at least three directors to attend to the interest of the State in the said company." (Act 14th February, 1823, chapter 56.)

Wellsburg and Washington Turnpike Company, $5,000, 7th Feb. 1823. By the act of 2d March, 1822, (chap. 59,) the Board of Public Works were "required to report to the General Assembly, at its next session, whether it be expedient and proper to subscribe the sum of 5,000 dollars, *upon the terms and conditions upon which the present stockholders in the said company have subscribed*:" *Provided*, "That previous to such subscription, satisfactory assurance shall be given to the Board, that the money subscribed shall be exclusively applied to improvements on the road." The Board of Public Works, on the 22d January, 1823, "recommended to the Legislature to authorise them to subscribe 5,000 dollars to the stock of the said company, upon such terms, and payable at such periods, as the Board of Public Works may deem expedient." And the General Assembly, on the 4th of February, 1823, (chapter 60,) passed a law authorising a subscription in conformity to the said recommendation. The subscription was accordingly made by the Board the 7th of February, 1823, but no conditions were prescribed. The memorial of the stockholders to the Legislature for a subscription, recognize the principles of the act of the 2d March, 1822.

Lynchburg & Salem Turnpike Company, $ 30,000, 31st August, 1824. "*Provided*, That the fund for Internal Improvement participate in the tolls of said road, so soon as a section thereof is completed, after the payment of any part of the stock of said fund, in the proportion which the sum so paid bears to the sum actually expended on the said road. *And provided*, That the said fund participate in the dividends declared by the said company in the proportion which 30,000 dollars bears to 73,900 dollars, from the time when the last payment shall become due from said fund. And that the Board of Public Works shall have the appointment of three directors to represent the State's interest in said company." "The said company shall not be compelled to pave the said road, farther than their funds, to be adjudged of and determined by the Board of Public Works, will admit; but the General Assembly reserve the right to apply at any future day, the tolls to the farther extension and completion of the road." (Act 17th February, 1823, chapter 62.)

Slate River Company, (payable one-fourth on the 1st August, 1825, individuals in the mean time paying in the same proportion. The other three-fourths in such proportions as shall be called for from individual stockholders, no one of which calls shall exceed 33⅓ per cent. of the said three-fourths,) $ 6,900, 13th January, 1826. "*Provided*, That individual subscriptions be secured as the act passed on the 4th March, 1819, amending the act creating a Fund for Internal Improvement, requires: *And provided also*, That the Fund for Internal Improvement participate in all dividends in said works; and when the dividend of the company shall reach 15 per cent. per annum per share, the tolls of the said company shall be so reduced, as that the dividend shall not exceed that amount: *And provided further*, That the stockholders consent to the appointment of two trustees on the part of the State, of the five directed by the Act of Incorporation." (Act 24th January, 1824, chapter 41.)

Manchester and Petersburg Turnpike Company, $8,000, 11th May, 1824. "*Provided*, That the Fund for Internal Improvement be placed on an equal footing with the original stockholders, and receive the full and equal proportion of any dividends which may be declared, and to which the stock standing in the name of the Board of Public Works would entitle the said Board: *And provided moreover*, That the sum to be subscribed by the Board of Public Works, be appropriated to the completion of that section of the road which commences at Petersburg." It is also "enacted, that the Board of Public Works be authorised to appoint two directors to represent the State's stock in the said company." (Act 6th March, 1824, chapter 64.)

Tye River and Blue Ridge Turnpike Company, (time of paying the subscription not stated,) $2,500, 50 shares: "*Provided*, The said company consent to the appointment of two directors to represent the State's interest therein; that the State participate in the dividends in proportion to the amount of its stock, and that the amount of the subscription hereby authorised, be appropriated exclusively towards the improvement and completion of the said road." (Act 1st March, 1826, chapter 67.)

Staunton and James River Turnpike Company, (payable 1-4th on the 15th July, 1827, and the remaining 3-4ths in three semi-annual instalments,) $20,000. To be subscribed so soon as the said company shall furnish evidence to the ex-officio members of the said Board that $30,000 of said stock subscribed by individuals has been actually paid in, or secured according to law: "*Provided*, That the Fund for Internal Improvement participate in proportion to the stock subscribed, in all dividends declared by the company, as the different instalments shall be paid: *And provided also*, That the said company consent to the appointment by the said Board of two directors to represent the State's interest therein." (Act 24th February, 1826, ch. 70.) The acts of 11th March, 1819, ch. 85, 8th of March, 1824, ch. 56, and 12th February, 1825, ch. 55, all authorised a subscription by the Board of Public Works on different terms from the act of 1826, which supersedes them.

Shepherdstown and Smithfield Turnpike Company, (payable one-fourth on the 15th January, 1828, and the remaining 3-4ths in three semi-annual instalments of $4,643 75,) $18,575: "*Provided*, That the money hereby authorised to be advanced to said company by taking part of the stock thereof, shall be applied exclusively to the completion of said

Dismal Swamp Canal Comp'y, 2d loan, $50,000, March 2d, 1821, chap. 49. "The payment whereof shall be secured by a pledge of the property of the Company; or by such security as shall be approved by the President of the Board of Public Works, to be paid as follows, viz: 12,500 dollars on the 1st day of July next; 12,500 dollars on the first day of January next; 12,500 dollars on the first day of July, 1822, and 12,500 dollars on the first day of January, 1823, each of which said several sums of money shall be refunded within three years from the time at which the same shall be loaned, and interest on each sum thus loaned shall be paid semi-annually into the public treasury to the credit of the Fund for Internal Improvement. On the 22d of June, 1821, the Board of Public Works passed resolutions accepting of a deed of trust executed by the Dismal Swamp Canal Company in their corporate capacity, "conveying all their right, title and interest in and to their canal to secure the re-payment of the loan made on the conditions prescribed in the act above mentioned, with interest thereon;" and directed the instalments thereof to be paid whenever the said deed should be duly executed and recorded, which was done.

Dismal Swamp Canal Company, 3d loan, $37,500, 20th Feb. 1824, chap. 40. "Payable in five equal semi-annual instalments, the first to be advanced on the 15th day of January, 1825, or so soon thereafter as the state of the Fund for Internal Improvement will permit: *Provided,* Such advance do not prevent the Board of Public Works from complying with any engagements now existing or authorised, and that the Dismal Swamp Canal Company do execute to the President and Directors of the Board of Public Works previous to the payment of the first instalment, a mortgage upon their whole property real and personal, as well also the nett income of all their tolls and receipts, and cause the same to be recorded in the Court of Norfolk county, to secure the payment of the same on or before the first day of January, 1830, and to pay the interest thereon, from the respective periods of advancing the same, semi-annually into the treasury to the credit of the Fund for Internal Improvement." The mortgage was accepted on the 3d of June, 1826, and the first and second instalments of the loan (commencing the 15th of January, 1826,) have been paid.

Richmond Dock Company, $50,000, 13th Feb. 1823, chapter 47. "Three hundred and seventy-five shares of the stock of the Bank of Virginia, and the sum of $12,500, payable as follows: $5,000 on the 15th day of July next; $5,000 on the 15th day of January next, and the residue on the 15th day of July following: *Provided,* That the said Company shall execute to the President and Directors of the Board of Public Works a lien upon all their real property and its appurtenances, for the return of the stock aforesaid, and payment of its dividends in manner herein provided, and for the re-payment of the said loan in four equal semi-annual instalments; the first instalment to be made on the first day of January, 1828, and that in the mean time the interest at six per centum per annum on the aforesaid sum of $12,500, be paid semi-annually into the treasury to the credit of the Fund for Internal Improvement, and the dividends declared from time to time on said stock paid in like manner, and the said stock be, at the expiration of the said credit, returned to the Board of Public Works in kind; and that the Corporation of the City of Richmond do come under an obligation to the President and Directors of the Board of Public Works, to pay them one-half of the loss, if any should be sustained by reason of the said loan, and shall secure such payment to the entire satisfaction of the said Board." The required securities being given, the loan was directed to be made by the Board of Public Works on the 8th of August, 1823.

E. E.

J. BROWN, Jr.
Second Auditor.

December, 1826.

L

STATEMENT,

[illegible]

[illegible] PAYABLE IN EACH YEAR.

[illegible] TOTAL AMOUNT TO BE PAID

On account of [illegible] authorised by law and payable out of the Fund for Internal Improvement.

	[illegible]	1827.	1828.	1829.	1830.	Total.
Fairfax Turnpike Company,	14th Feb. 18[illegible], ch. [illegible],	900 00				900 00
Lynchburg and Salem Turnpike Company, - - - -	17th Feb 1823, ch. 62,	5000 00				5000 00
Roanoke Navigation Company, -	15th Jan. 1817, ch. 41,	3200 00				3200 00
Slate River Company, - -	24th Jan. 1824, ch. 41,	3450 00	1725 00			5175 00
Dismal Swamp Canal Company, (loan to)	13th Feb. 1823, ch. 47,	15000 00	7500 00			22500 00
(The acts authorising the following, have not been yet acted on by the Board of Public Works.)						
Ashby's Gap Turnpike Company, -	7th Feb. 1825, ch. 53,	7000 00	7000 00			14000 00
Junction Canal Company, - -	8th Feb. 1825, ch. 51,		5000 00	10000 00	5000 00	20000 00
Staunton and James River Turnpike Company, - - - -	24th Feb. 1826, ch. 70,	5000 00	10000 00	5000 00		20000 00
Fallsbridge Turnpike Company, -	22d Feb. 1826, ch. 68,	2000 00	4000 00	2000 00		8000 00

Shepherdstown and Smithfield Turnpike Company, - - - -	20th Feb. 1826, ch. 69,		9287 50	9287 50		18575 00
		41550 00	44512 50	26287 50	5000 00	117350 00
(*) Tye River and Bl. R. T. Company,	1st Mar. 1826, ch. 67,					2500 00
					Total,	119850 00

NOTE.—(*) No time is specified in the act for the payment of the subscription authorised to the Tye River and Blue Ridge Turnpike Company: And no subscription has yet been made by the Board of Public Works.

RECAPITULATION.

Payable in 1827,	-	41,550 00
1828,	-	44,512 50
1829,	-	26,287 50
1830,	-	5,000 00
Time not specified,	-	2,500 00
	Total,	$ 119,850 00

E. E.

J. BROWN, Jr.
Second Auditor.

A.

SUMMARY STATEMENT

OF THE

REVENUE OF THE JAMES RIVER COMPANY,

DERIVED FROM THE

LOWER SECTION OF THE CANAL,

And of the application thereof, for the year ending the 31st *December,* 1826.

Received from tolls on produce and merchandize, as per statement E.			37,944 54
Received from rents of water,			3,390 00
rents of ground,			500 00
			41,837 54
Deduct charges, viz:			
Lock-keepers' wages, including pay of hands employed by them, viz:			
At Basin locks, Richmond,		400 00	
Lower arch,		618 00	
Westham,	9 mths.	470 00	
Shapard's,	"	235 00	
Wickham's,	"	468 17	
Sampson's,	"	225 00	
Maiden's Adventure,	"	387 50	
		2,803 67	
Toll-gatherer (including clerks,)		2,000 00	
Superintendent and agent of lower canal 6 months,		400 00	
Carried forward,		5,203 67	41,837 54

Brought forward,		5,203 67	41,837 54
Door-keeper and Messenger, $ 40, clerk to Board, $ 100, -		140 00	
Books and stationery for toll-gatherer's office, - -		113 55	
Coal for ditto, 1825, $ 24, and 1826, $ 25 50, - -		49 50	
Paper and quills for lock-keeper and inspector at Westham in 1825,		5 37	
Advertising new tariff tolls, -		2 50	
Expenses of the President and Directors on a tour of examination of the canal in March and April, 1826,		67 85	
			5,582 44
Net revenue,			$ 36,255 10
Applied as follows:			
To repairs on lower canal,		5,584 67	
To dividend July, 1826, on 700 original shares,	8,400 00		
To dividend Jan. 1827, on ditto,	8,400 00		
		16,800 00	
To the surplus fund, July 1826, towards payment of interest on loans,	6,000 00		
To do. do. Jan. 1827,	7,870 43		
		13,870 43	
			36,255 10

E. E.

J. BROWN, Jr.
2d Auditor.

B.

STATEMENT OF TOLLS

Collected on the Kanawha Road in eleven months, ending the 15th August, 1826.

At toll-gate at Metzker's,	552 70
Gauley bridge and ferry,	747 68
Bates's,	481 03
White Sulpher Springs,	646 92
Callaghan's,	476 54
	2,904 87
Deduct commissions at 9 per cent. stationery, &c.	230 62
Net amount of tolls,	$ 2,674 25

Note.—The repairs during the same period amounted to $ 1623 55, of which only $ 123 55 are paid.

E. E.

J. BROWN, Jr.
2d Auditor.

C.

EXPENDITURES OUT OF LOANS

From the 24th *February,* 1823, *to the* 31st *December,* 1826.

On lower section of James River Canal,	635,840 84
Mountain section of ditto,	313,405 69
Kanawha road and continuation,	165,064 57
Kanawha river,	66,159 93
For charges on Kanawha Road and Navigation, (say proportion of salary of Commissioner, Engineers, &c.)	3,775 38
Carried forward,	1,184,246 41

Brought forward,	$1,184,246 41
For general charges on all the above improvements, (say for proportion of 2d Auditor's salary, &c.)	2,624 75
Total amount expended,	$1,186,871 16

Note.—Amount of Loans,	1,230,000 00
Add premium on $ 200,000 loan 1826,	2,500 00
	1.232,500 00
Deduct expenditures as above,	1,186,871 16
Balance in Treasury 31st Dec. 1826,	$ 45,628 84

E. E.

J. BROWN, Jr.
2d Auditor.

D.

The balance in the Treasury on the 1*st January,* 1827, *at credit of the James River Company, is as follows, viz:*

Set apart for undrawn dividends, -	12,223 12
for surplus fund, - -	7,870 43
Amount of loans unexpended, . -	45,628 84
Amount of tolls on Kanawha road, deducting part of the repairs, ($123 55)	2,550 70
Amount received in anticipation of rent of water due in 1827, - -	500 00
	$68,773 09

E. E.

J. BROWN, Jr.
2d Auditor.

E.

LIST OF ARTICLES

Brought down James River to Richmond, and charged with Toll on the lower canal in the year 1826.

19,613	hogsheads tobacco,	Producing in tolls, $31,741 22
193	do. stems,	
95,791	bushels wheat,	
44,748½	barrels flour,	
8,992	bushels corn, &c.	
357,559	bushels coal,	
199	tons bar iron and castings,	
771¼	tons pig iron,	
427¾	tons stone, slate, &c.	
179	cords wood,	
169,200	barrel staves,	
48,800	hoop poles,	
279,000	feet plank,	
28 1-8	hogsheads whiskey,	
4 6-20	tons hay,	
12,672	cwt. unenumerated and miscellaneous articles,	
598	empty small boats,	
18	empty large do.	

The tolls on articles carried up the river, amounted to - - -	$6,202 32
	$37,944 54

E. E.

J. BROWN, Jr.
2d Auditor.

DUTIES

OF THE

PRINCIPAL ENGINEER

FOR THE YEAR 1827.

(*Adopted by the Board of Public Works 24th Jan.* 1827.)

The committee appointed to prescribe the duties of the Principal Engineer for the present year, have performed the service, and beg leave to report that the objects to which his attention is required by acts and resolutions of the General Assembly heretofore passed, and not yet acted on, are as follows, to wit:

To survey the Meherrin river from Murfreesborough to the highest navigable point on said river.

To survey and examine Nottoway river from the mouth to the highest navigable point on said river.

To survey the shortest practicable route from the north end of the bridge at Danville in Pittsylvania county, to Wythe court-house.

To examine the country lying between the waters of New river and those of the Roanoke, with a view to ascertain the practicability of connecting the same by a canal or otherwise.

To survey a route for a road from the falls of the Great Kanawha river to Point Pleasant on the north-east side of said river.

To survey a route from Charlestown in Kanawha county, on both the north-east and south-west side of Kanawha river to Johnson's shoals, and thence to the mouth of Guyandotte river.

To mark the best site for a bridge over Cheat and Valley river at or near where the State road crosses them.

To examine the Pianketank river from Turk's ferry to the highest point in the Dragon Swamp to which navigation may be extended in flat bottomed boats.

To survey the north fork of Pamunkey river, and prepare estimates of the probable expense of improving the navigation of the said river by locks and dams.

To finish the survey from Covington to Lynchburg agreeably to the second section of the act of March, 1826; and also, the shortest and most practicable route for a road from Covington to the City of Richmond.

To survey and examine a route for a road from the Ashby's Gap Turnpike Road above Middleburg, through Poverty Hollow, by the way of Front Royal, to Strasburg in the county of Shenandoah.

To survey and locate a route for a road from Beverley in the county of Randolph, to Clarksburg in Harrison county.

To survey and locate a road the most practicable route from Gauley bridge to Nicholas court-house, from thence to Haymond's Salt Works, and from thence to Lewis court-house, and from thence to Salem in the county of Harrison.

And *report to this Board* at its next annual meeting his progress in the execution of the aforesaid duties.

Resolved, That the Principal Engineer attend to the services recommended in the foregoing report.

Resolved, That if after the adjournment of this Board the General Assembly shall pass any laws or resolutions requiring the services of the Engineer, they be referred, and they are hereby referred, to the ex-officio Directors, and made subject to their order.

Resolved, That if the Principal Engineer shall have sufficient leisure from the duties herein prescribed, or which may be prescribed by the ex-officio Directors as aforesaid, he shall examine such routes of roads as the said ex-officio Directors may consider of great and leading public importance, especially one leading from Harper's Ferry on the Potomac through the valley to the northern boundary of Tennessee.

Resolved, That it shall be the duty of the Principal Engineer hereafter, to keep an accurate and distinct account of the time and money spent by him in each and every survey and examination, to which his attention may be directed.

A copy,

J. BROWN, Jr.
2d Auditor.

ADOPTED APRIL 8, 1827.

(By the ex-officio Members.)

Resolved, That the duties prescribed to the Principal Engineer for the present year, by the Board of Public Works and the Legislature, at their late sessions, be performed in the following order, viz:

1. The survey of the North Branch of Pamunkey.
2. The survey of the James and Jackson's river with a view to their improvement by dams and sluices.
3. The location of the road across the Warm Springs mountain.
4. The completion of the examination for a road from Covington to Lynchburg.
5. The survey for a road from Danville to Wythe Courthouse.
6. The examination of the country between the waters of Roanoke and New rivers.
7. The survey of the Meherrin.

Should the whole season not be consumed by the duties above specified, the Engineer may execute such other surveys or examinations as he may deem most important, or as may be most convenient to the part of the country he may be engaged in at the time.

A copy,

J. BROWN, Jr.
2d Auditor.

TWELFTH

Annual Report

OF THE

PRESIDENT AND DIRECTORS

OF THE

BOARD OF PUBLIC WORKS,

TO THE

GENERAL ASSEMBLY OF VIRGINIA,

JANUARY 24th, 1828.

RICHMOND:
Printed by Samuel Shepherd & Co.
1828.

RICHMOND, 25th January, 1828.

SIR,

I have the honor to lay before the General Assembly, the Annual Report of the President and Directors of the Board of Public Works, prepared in conformity to the act, entitled, "An act creating a Fund for Internal Improvement."

I also transmit the Report of the Principal Engineer, on his survey and examination of the James and Jackson's river, as directed by a resolution of the General Assembly, of the 9th March last.

With great respect, Sir,
Your most obedient servant,
WM. B. GILES,
President of the B. of P. Works.

The honorable the Speaker of the House of Delegates.

REPORT.

The President and Directors of the Board of Public Works, in obedience to the act, entitled, "An act to create a Fund for Internal Improvement," submit their ANNUAL REPORT, to the General Assembly.

The Fund consists of the following permanent and disposable stocks, viz:

PERMANENT FUND.

125½	shares of stock in the Little River turnpike company,		12,550 00
250	shares of stock in the James River company,		50,000 00
7947	shares of stock in the Bank of Virginia,		794,700 00
3334	shares of stock in the Farmers' Bank of Virginia,		333,400 00
900	shares of stock in the Bank of the Valley,		90,000 00
231	shares of stock in the North Western Bank of Virginia,		23,100 00
70	shares of stock in the Dismal Swamp canal company,		17,500 00
82	shares of stock in the Swift Run Gap turnpike company,		4,100 00
125	shares of stock in the Appomattox company,		12,500 00
70	shares of stock in the Potowmac company,		31,111 11
	Certificates of James River Company,		50,000 00
	Making an aggregate of		$1,418,961 11
	The amount of this fund yielding income, is	1,357,850 00	
	The amount producing no revenue, is	61,111 11	
			$1,418,961 11

DISPOSABLE FUND.

The following stocks are acquired by the application of the income of the Fund for Internal Improvement, and are disposable agreeably to the 13th section of the act creating that fund:

35 shares in the Farmers' Bank of Virginia,	3,500 00
50 shares in the Bank of the Valley,	5,000 00
34 shares in the James River company,	6,800 00
375 shares in the Bank of Virginia, (lent to the Richmond Dock company,)	37,500 00
00 shares in the Bank United States, (lent to Dismal Swamp Canal company,)	50,000 00
Loan to the Richmond Dock company,	12,500 00
Loan to the Dismal Swamp Canal company,	50.000 00
Loan to the same company	30.000 00
186 shares in the Dismal Swamp Canal company,	46,500 00
1000 shares in the Richmond Dock company	62,500 00
672 shares in the Leesburg turnpike company,	33,600 00
920 shares in the Swift Run Gap turnpike company,	46,000 00
50 shares in the Cartersville Bridge company,	5,000 00
160 shares in the Fallsbridge turnpike company, 2d subscription of $8,000,	2,000 00
480 shares in the Fallsbridge turnpike company,	24,000 00
200 shares in the Wellsburg and Washington turnpike company,	5,000 00
400 shares in the Snicker's Gap turnpike company,	20,000 00
140 shares in the Monongalia Navigation company,	8,180 00
300 shares in the Fauquier and Alexandria turnpike company,	30,000 00
80 shares in the Manchester and Petersburg turnpike company,	8,000 00
800 shares in the Roanoke Navigation company, $80,000, paid	76,800 00
160 shares in the Fairfax turnpike company,	5,400 00
300 shares in the Lynchburg and Salem turnpike company,	30,000 00
69 shares in the Slate River company, $6,900, paid	2,208 00
Amount carried forward,	$600,488 00

Amount brought forward,		600,488 00
140 shares in the Ashby's Gap turnpike company, $ 14,000, paid		7,000 00
200 shares in the Staunton and James River turnpike company, $ 20,000, paid		5,000 00
Total amount of disposable stocks,		$612,488 00
The amount of this fund producing revenue, is	195,300 00	
The amount unproductive, is	417,188 00	
		612,488 00
Permanent funds in stocks	1,418,961 11	
Disposabie do	612,488 00	
	2,031,449 11	
To which add balance in the Treasury on the 30th Nov. last,	3,634 61	
Aggregate amount of the Fund for Internal Improvement,	$ 2,035,083 72	

From the productive portions of these funds, permanent and disposable, the following sums have been received, for dividends and interest, since the 1st day of December, 1826, viz:

From the Bank of Virginia, on 7947 shares,	39,735 00
Ditto, 375 "	1,875 00
Farmers' Bank of Virginia, on 3369 shares,	16,845 00
Bank of the Valley, on 950 shares,	5,650 00
James River company, on 284 shares,	6,816 00
Little River turnpike company, on 125½ shares,	502 00
United States' Bank, on 500 shares,	4,500 00
Certificates of James River company loans, $ 50,000,	3,000 00
North Western Bank of Virginia, on 231 shares,	2,469 32
Loan to Richmond Dock company, $ 12,500,	750 00
Loan to Dismal Swamp canal company, $ 50,000,	4,500 00
Amount carried forward,	$ 86,642 32

Amount brought forward,			86,642 32
Loan to Dismal Swamp canal company, of $37,500, paid $30,000,			1,243 38
James River certificates of loan belonging to the surplus fund, $40,300, (sold in May,)		1,921 09	
James River canal, surplus of tolls and rents on lower canal, to 31st Dec. 1826,	7,870 43		
Ditto, to 31st July, 1827,	14,292 93		
		22,163 36	
			24,084 45
C. Crozet, P. Engineer, balance of advances for surveys, unexpended, returned into the Treasury,			222 61
For error in the late Treasurer's (Preston's) account, rectified,			20 09
			$112,212 85

Out of the income accruing and received between the 30th November, 1826, and 1st December, 1827, there have been disbursed the following sums, viz:

Last instalment to Fairfax turnpike company,	900 00
Last instalment to Lynchburg and Salem turnpike company,	5,000 00
Two requisitions to Slate River company,	483 00
1st instalment to Ashby's Gap turnpike company,	7,000 00
1st instalment to Staunton and James River company,	5,000 00
1st instalment to Fallsbridge turnpike company, 2d subscription,	2,000 00
3d and 4th instalments of loan of $37,500, to Dismal Swamp Canal company,	15,000 00
Expenses of surveys and examinations in 1827, advanced to the Principal Engineer,	3,956 66
One year's salary to the collector of the Board,	300 00
Ditto to the Principal Engineer,	3,500 00
Ditto to 2d Auditor,	500 00
Ditto to 2d Auditor's clerk,	233 34
Compensation and mileage of the Directors of the Board, at the 11th annual meeting,	1,167 87
Amount carried forward,	$45,040 87

Amount brought forward,	45,040 87
Printing the 11th annual report of the Board of Public Works,	171 00
Door-keeper to the Board, and postages	59 75
Strickland's reports on canals and railways,	10 00
Interest on Certificates of James River loans,	70,370 34
	$ 115,651 96

The certain and probable charges upon the income of the fund for the current year, will be,

Last instalment to Roanoke Navigation company,	3,200 00
3d instalment to Slate River company,	1,725 00
2d instalment to Ashby's Gap turnpike company,	7,000 00
2d & 3d instalments to Staunton and James River turnpike company,	10,000 00
2d & 3d instalments to Fallsbridge turnpike company,	4,000 00
Last instalment of loan to Dismal Swamp Canal company,	7,500 00
1st & 2d instalments to Shepherdstown and Smithfield turnpike company,	9,287 50
Expenses of surveys and examinations,	3,000 00
Salaries—of Principal Engineer, $ 3,500; Collector, $ 300,	3,800 00
Do of 2d Auditor and Clerk,	733 33
Compensation and mileage of Directors at the 12th annual meeting of the Board,	1,200 00
Contingent expenses, viz: Printing 12th annual report, postages, door-keeper, &c.	300 00
One year's interest on Certificates of James River company loans of $ 1,230,000,	71,673 50
Amounting to,	$ 123,419 33

To discharge which, the probable receipts from the productive stocks of the fund will be,

Dividends from the Bank of Virginia, on 7,947 shares,	31,788 00
Dividends from the Farmers' Bank of Virginia, on 3,369 shares,	16,845 00
Amount carried forward,	$ 48,633 00

Amount brought forward,	$48,633	00
idends from the Bank of the Valley, on 950 shares,	5,650	00
vidends from the North Western Bank of Virginia, on 231 shares,	1,617	00
ends from the James River company, on 284 shares,	6,816	00
vidends from the Little River turnpike company, on 125½ shares,	627	50
ividends from the Swift Run Gap turnpike company, on 82 shares,	102	50
ds from the United States' Bank, 500 res, (lent Dismal Swamp Canal comy,)	3,000	00
ds from the Bank of Virginia, 375 shares (lent Richmond Dock company,)	1,500	00
erest on certificates of James River company loans, $50,000	3,000	00
est on loan to Richmond Dock company, $12,500,	750	00
nterest on loan to Dismal Swamp Canal company, $50,000,	3,000	00
nterest on loan to same company, $37,500,	2,025	00
	76,721	00
To which may be added balance in the Treasury, on the 30th November, 1827,	3,634	61
Surplus tolls and rents from lower James river canal, estimated at	22,063	72
Tolls on the Kanawha road, received and receivable within the year,	3,772	44
Total probable receipts within the year,	106,191	77
Total certain and probable disbursements within the year,	123,419	33
Probable deficiency,	$17,227	56

e state of the fund to the 30th November last, as reported by the Second Auditor, exhibits a deficiency of	$21,000	00
The deficiency herein reported, is	17,227	56
	$3,772	44

This discrepancy arises from the receipt into the Treasury, since the 30th November, from the Kanawha road:

Tolls to the amount of	$2,427 44
and tolls from the same source estimated at	1,345 00
being taken into the account, amounting to	$3,772 44

the exact difference between the two amounts of deficiency as reported.

The estimates of receipts and expenditures, though last in order, as presented to the notice of the General Assembly, is the first subject to which their attention will be invited. It will be seen, that there exists a deficiency of funds to meet the engagements entered into, and which should be complied with, within the year. It is the first time it has occurred since the establishment of the Board of Public Works, and cannot be ascribed to a want of due caution and circumspection, in creating charges payable out of the income of the year, but has arisen entirely from the circumstance of a material reduction in the dividends declared by the Bank of Virginia and Farmers' Bank of Virginia, which was neither expected, nor could be foreseen. The demands upon the fund payable within the year, consist of instalments of subscriptions made by authority of law several years ago, and exceed those of a like kind paid last year, by the sum of $7,767 37 only; whereas, the reduction of income, from the cause before mentioned, amounts to upwards of $30,000. The receipt of this last sum, which it was reasonable to expect, but of which the fund has been deprived, would have increased the income to an amount largely exceeding the expenditures chargeable upon it, and after paying all demands, would have left in the treasury, to the credit of the fund, a greater balance than has existed for many years. This view of the subject, it is hoped, will satisfactorily shew, that the existing deficiency has arisen from causes beyond the controul of the Board, and is in no degree ascribed to a disregard of the ability of the fund to meet the appropriations charged upon it. But, from whatever cause the deficiency may have arisen, it is important and much to be desired, that the faith of the Board should be preserved, by a strict compliance with its engagements. The inconvenience and detriment to which improvements in progress may be subjected, by disappointment in receiving the respective amounts due to each, and necessary to enable them to prosecute and complete their labours within the year, as is expected of several of them, furnishes another reason in favor of a compliance by the Board with the engagements entered into. To accomplish this desirable object, it is respectfully recommended that the Board of Public Works be authorised by an act of the General Assembly, to borrow, upon a pledge of a portion of the disposable stock of the fund, a sum of money not exceeding $ 80,000, upon condition that it be paid as soon as the income of the fund, under existing engagements, will permit, and that no new subscriptions be made, to be complied with, until the debt shall be discharged. It may here be remarked, and the opinion is advanced with confidence, that the debt thus contracted, if it shall be authorised, may be discharged within one year from this date.

The exhibit of the state of the fund herewith submitted, shews an increase, exceeding fifty per cent., upon the capital stock originally assigned to the object of internal improvement: great as this increase is, it would have been still greater, but for causes hereafter to be noticed. The ability of the fund has not, however, increased in equal ratio; it could not with reason be expected to be the case, but the disproportion is greater than should exist. It will readily be perceived, that this arises from the unprofitable investments made in some instances, but in a greater degree from the unproductiveness of some of the stocks, acquired by subscriptions to the several companies with which the Board is connected, and whose improvements are not yet completed. For the first no remedy is perceived; the last cause may, however, be expected to be removed by time, and the continued efforts made to accomplish the improvements in progress. The only investment made, from which it is certain that the Fund for Internal Improvement will never derive any benefit, is a subscription of $ 8,180 to the capital stock of the Monongalia Navigation company, made by direction of an act of the General Assembly. The reports and returns from the several companies, in the stock of which the fund participates, do not present so favorable and encouraging prospects as have been anticipated, or could be desired. Until these improvements shall be completed, and a reasonable time allowed to test the importance of each and every one, it would not be proper to express any opinion of their probable future utility compared with their cost. It is apprehended, however, that some of the improvements undertaken may not be of the character and importance designed by the Legislature to be promoted and assisted by the Fund for Internal Improvement, and may never become links in a chain connecting remote parts of the State, under a more uniform system of improvement, as was evidently contemplated by the act creating the fund. In support of the opinion here advanced, reference is made to the first section of that act: "*Be it enacted by the General Assembly,* That a fund shall be, and the same is hereby created, to be denominated "The Fund for Internal Improvement," and to be applied exclusively to the purpose of rendering navigable, and uniting by canals, the principal rivers, and of more intimately connecting, by public high-ways, the different parts of this Commonwealth."

The next subject to which the General Assembly is invited to turn its attention, is one standing in a different relation to the fund from those just mentioned. The improvement of the James river has been, and is, prosecuted on the credit of the State, while the interest on the money borrowed is charged on the Fund for Internal Improvement; and however complete the success of the enterprise may be, and however great the receipts, the fund can only be liberated from the payment of interest, and can receive no accession of capital in consideration of the large requisitions made upon it.

The interest on this account, charged on the income of this year, will be $71,673 50; but this charge should have credit for the amount of surplus tolls, included in the estimate of receipts $23,408 72, which will leave $48,264 78 more to be paid to this improvement than is received from it. As the surplus of tolls, however, forms a part of the gross amount of receipts, $106,191 77, the whole amount of interest on the James River loans $71,673 50 is to be subtracted from the income of the fund, which leaves applicable to other objects of improvement the sum of $34,518 27. From this statement it appears that the interest on the James River loans absorbs nearly two-thirds of the income of the fund. This heavy burthen under which the fund labours, deprives it in a great degree of the power of effecting any important improvement in a reasonable time, and it is rather hoped that in the prosecution of the James river improvements, measures may be devised, by which that important object may be accomplished, and the fund relieved, than expected that any additional burthen will be imposed upon it This subject being under the exclusive control of the General Assembly, is only adverted to as affecting the income of the fund. The contributions made to other improvements, on the other hand, become a rt of the capital stock of the fund. And at the same time t the fund contributes to the improvement and amelioration nany sections of the country, it acquires strength and tance wherewith to extend its aid in the accomplishment of the design for which it was created. Notwithstanding the burthens by which the fund is at present oppressed, it will in few years be relieved from existing engagements, as the following compressed view will shew:

In 1829, the charges upon the income amount to $23,254 50 cents; in 1830 to $10,500; in 1831 to $4,000: to the amounts payable in each year is to be added the interest on the James River Company Loans, which, after deducting the surplus of tolls, may be estimated at $46,000, and expenses of surveys and incidental charges $10,000, making $56,000. The amount payable in each year enumerated, under present engagements, will be in 1829, $79,254 50; in 1830, 66,500; in 1831, $60,000.

After the last named period, the income of the fund will be exonerated from all charges upon it. There are several companies, however, incorporated by the General Assembly, which will be entitled under their charters to subscriptions in proportion to their capital stocks, and which will be chargeable upon the income of each of these years, in such amounts as the estimated receipts will warrant.

The Principal Engineer, under resolutions of the General Assembly, orders of the Board, and of the members ex officio, has made since the last annual meeting of the Board, a survey of the north branch of Pamunkey, a survey and examination of James and Jackson's river, with a view to their improvement by dams and sluices, a survey and location of a road across the Warm Spring mountain, a survey of a road from Danville to Wythe court-house, a survey and examination of the country between the head-waters of Roanoke and New rivers, a survey of the country between Lynchburg and Lexington, with a view to the location of a road between Covington and Lynchburg, and recently a survey for a rail-way from the coal-pits to James river. Examinations have been made, within the same period, of the Staunton and James River Turnpike, the Salem and Lynchburg Turnpike, the Canals at the Blue Ridge, and near Richmond, and the Cartersville bridge. Reports on these several subjects will be made, which will be laid before the General Assembly as soon as they shall be received.

The reports and returns of the several companies, to the capital stock of which the fund has subscribed, are herewith communicated. They are,

The Cartersville Bridge Company,
Upper Appomattox Company,
Dismal Swamp Canal Company,
Fairfax Turnpike Company,
Fauquier and Alexandria Turnpike Company,
Fallsbridge Turnpike Company,
Leesburg Turnpike Company,
Little River Turnpike Company,
Lynchburg and Salem Turnpike Company,
Manchester and Petersburg Turnpike Company,
Richmond Dock Company,
Roanoke Navigation Company,
Slate River Company,
Staunton and James River Company,
Shepherdstown and Smithfield Turnpike Company,
Snicker's Gap Turnpike Company,
Swift Run Gap Turnpike Company, and
Wellsburg and Washington Turnpike Company.

All which is respectfully submitted.

WM. B. GILES.

January 24th, 1828.

RETURNS AND REPORTS

OF

COMPANIES.

UPPER APPOMATTOX COMPANY.

To the President and Directors of the Board of Public Works.

In the papers enclosed you have our return as usual, marked A. and B.

The expensive aqueduct over Old Town creek having been destroyed by an extraordinary freshet in the creek, the expense of re-building and the stoppage of tolls has occasioned the great diminution in our income.

We look forward with much interest to the period when all scrambling for, and bickering about the application of the public patronage shall cease in our public councils, and every company in the State be placed on the same footing, as to the amount of stock, and the terms on which it shall be subscribed by the Board of Public Works. We are of opinion that, if the rule for subscribing stock, laid down in the 11th and 12th sections of the law creating the Fund for Internal Improvement, be not a good rule, that it should be repealed and substituted by some other. But if, as we believe, the rule be good, and remains the law, then it would promote the peace and harmony of the country, and certainly comport with the dignity and justice of government, to respect the rule.

We are, with great regard, your fellow-labourers in the cause of improving our common country,

Your obedient servants,

NATH: VENABLE,
RICH'D. N. VENABLE,
THOS: A. MORTON,
JAMES MADISON.

Farmville, Nov. 27, 1827.

A.

Return of the state of the Upper Appomattox Company on the 1st day of September, 1827.

Capital subscribed by individuals,		48,500 00
Do by the State,		12,500 00
Aggregate of requisitions made on stockholders,		61,000 00
Amount paid by stockholders,		61,000 00
Amount due from do (nothing.)		
Amount due by the Board of Public Works, (nothing.)		
Amount expended in the work to August 31, 1823,	86,789 61	
Amount expended in the work from Sept. 1, 1823, to Aug 31, 1825,	1,626 35	
Amount expended in the work from Sept 1, 1825, to Aug. 31, 1826,	1,573 62	
Amount expended in the work from Sept. 1, 1826, to Aug. 31, 1827,	8,355 73	
		98,345 31
Debts due by the Company,	13,958 33	
Interest on said debts,	5,446 89	
		19,405 22
Debts due to the company, of which may be considered ultimately good,	14,796 20	
Interest on the same,	109 66	
Bad and doubtful,	2,137 11	
Interest on do.	1,153 41	
		18,196 38
Income during the year ending August 31, 1827, viz:		
From tolls,	273 51	
From rents,	406 36	
From other sources, (nothing.)		
		679 87
Expenditures during the same period, other than for improvements and repairs, viz:		
Officers' salaries: Clerk and collector of tolls,	600 00	
Other expenses,	496 21	
		1,096 21
Dividends declared,		00 00
Balance of money on hand,		140 18

B.

Upper Appomattox Company, from 1st *Sep-tember,* 1826, *to August* 31*st*, 1827.

33 barrels flour,
6 bushels wheat,
3 hogsheads tobacco,
1,668 bushels salt,
2,647 lbs. goods,
70 tierces lime,
00 feet timber,
} Producing in tolls, $273 51

te- al passes Old Town creek, was carried away
h October, 1826; and the repairs not having
eived since that time.

S GAP TURNPIKE COMPANY.*

MIDDLEBURG, March 17, 1828.

Mr. J. Brown, Jr.
Secretary to the Board of Public Works.

SIR,

Enclosed you will receive a statement of the Ashby's Gap Turnpike Company, up to the 1st February, 1828, agreeably to the instructions handed me last week by Asa Rogers, Esq.

I am, Sir, very respectfully,
Your obedient servant,
H. GIBSON, *Treasurer*
Of Ashby's Gap Turnpike Company.

---

* This report was not included in the report of the Board of Public Works to the General Assembly, having come to hand subsequently.

Return of the state of the Ashby's Gap Turnpike Company, February 1*st*, 1828, (*the time at which the State is first entitled to come in with the other stockholders for dividend.*)

Capital subscribed by individuals,	1246½ shares	
Deduct taken in from Doctor Burwell's estate, in part payment of a debt for stock subscribed for by the Doctor in his life-time,	56	
	1190½ shares at $100,	119,050 00
By the State or Board of Public Works, 140 shares, at $100,		14,000 00
Aggregate of requisitions made on individual stockholders: full amount.		
Amount paid by individuals: the full amount of subscription, (in cash and good bonds.)		
Amount due from individuals: nothing, but what is yet to collect on the bonds, as above stated, and entered below.		
Amount paid by the Board of Public Works,		7,000 00
Amount expended in the work from its commencement, including officers' salaries, and all other expenses, (over and above a part of the tolls used in the progress of the work, which has not been distributed among the stockholders, in dividends,)		133,050 00
Debts due by the company, viz:		
To the Bank of Alexandria, $7,400; to Bank of Potomac, $9,000, for which the company has deposited in the Banks bonds executed by Doctor Lewis Burwell and Nathaniel Burwell, to be in full satisfaction when collected, of the debts due as aforesaid,		16,400 00
To stockholders, for a balance of dividends declared up to February 1st, 1827, on which payment was deferred by an order of the stockholders, till the company should be in funds from collections,		7,007 82
To James Hixson, due him on account of repairs,		960 22

Debts due to the company, other than on account of stock, viz:	
From Dr. Burwell's administratrix,	**1,699 40**
Joseph Tuly, $97 43; John Boyd, $63 09,	**160 52**
Tho. Chinn, $83 16; Snicker's Gap turnpike company, $95 00; Tho. Wren, $20 00; Nathaniel Taylor, $27 65; John Underwood, $20 60; all doubtful,	**246 41**
The Board of Public Works, 2d instalment on stock subscribed for, payable this day,	**7,000 00**
Doct. Lewis Burwell and Nathaniel Burwell, their bonds for balance of stock subscribed for, which are lodged in the Banks to cover Bank debts, as above stated,	**16,400 00**
Income during the year ending 31st January, 1828, viz:	
From tolls, (there being no other source of income,) for one year from 1st February, 1827,	**5,420 84**
Expenditures during the year:	
For improvements and repairs, (having to rebuild stone bridges that had been swept away by floods,) including the Treasurer's commission, and all incidental expenses,	3,800 42
Officers' salaries: Nothing, except to the Treasurer 2 per cent. for collecting and paying out money, and $25 for collecting from and settling with gate-keepers.	
Other expenses: Nothing; all being included in the above item of improvements and repairs for this year, the amount being very inconsiderable, but will be separately reported hereafter.	
Expenses of collecting tolls, **viz: gate-keeper's wages,**	896 88
Treasurer's allowance for collecting and settling,	25 00
Balance of money in hand	499 79

Dividend declared and when payable: for the past year none has been declared: the surplus of tolls over re-building bridges and repairing the road, was so small, as not to be deemed sufficient for a division now, but will increase the dividend for the next year, which it is expected will be made in February, 1829.

H. GIBSON, *Treasurer*
Of Ashby's Gap Turnpike Company.

Middleburg, Loudoun County,
February 1, 1828.

CARTERSVILLE BRIDGE COMPANY.

The Treasurer of the Cartersville Bridge Company begs leave to report to the stockholders, that he has received of the funds of the company, since 1st November, 1826, the date of his last annual report, as will appear by his account current herewith furnished,	$439 82
That he has expended of those funds, as will likewise appear by his account current,	329 76
	110 06
That he had on hand at the date of his last report,	139 36
Which added to the above balance, makes	$249 42
An amount subject to the order of the Company.	
The debt due as stated in my last annual report, viz:	
Due on subscription of 1823,	$41 50
Ditto 1824,	85 00
Ditto 1825,	135 00
Ditto 1826,	251 00
Ditto 1st Jan'y. 1828,	185 00
	697 50
From which deduct payments on these various claims, as exhibited in my account current,	152 37
	545 23
To which add the balance on hand, as reported above,	249 42
Makes an amount of	$794 65

Applicable to the payment of the debts of the company; which amount to the sum of $600.

There are other claims against the company, for services rendered in securing the two arches of the bridge that have fallen, but which have not been regularly acknowledged by the company, and therefore are not noticed in this report. They will be more than provided for, by the sale of such of the timbers of the bridge as you may deem advisable to dispose of. The balance on hand has not been appropriated according to the resolutions of the Managers, directing the Treasurer to pay all monies in his hands to the discharge of the debts of the company at Bank; because the disasters of the company since 1st September last, rendered it advisable, in my judgment, to retain this amount to meet any expenses the company may think necessary to incur in the preservation of the remains of the bridge. It will be observed, that in the estimate of receipts, the whole amount of the tolls and yearly subscription received by Zach. Taylor, are included: whereas, there is a balance due on his account, herewith rendered, of $21 35. Respectfully,

F. B. DEANE, Jr.

The foregoing exhibit of the state of the funds of the Cartersville Bridge Company, was this day made to the company, in full meeting, and is now submitted to the Board of Public Works, as their annual report for 1827.

THOMAS MILLER, *President*
Of Cartersville Bridge Company.

November 21*st*, 1827.

DISMAL SWAMP CANAL COMPANY.

Office of the Dismal Swamp Canal Company,
Norfolk, December 11*th*, 1827.

James Brown, Jr. Second Auditor.

Sir,

We herewith transmit a state of the affairs of the Dismal Swamp Canal Company, accompanied by a report. These returns have been delayed a few days beyond the period they are required by law to be made, in consequence of the distance of the site of the work from this place, the residence of the Directors, which renders it difficult to procure the minute information necessary to present a correct exhibit of the operations and condition of the company, at any prescribed date.

We are, very respectfully, Sir,

Your obedient servants,

GEORGE M'INTOSH, } Directors.
JOHN TABB, }

To the President and Directors of the Board of Public Works of Virginia.

The Directors of the Dismal Swamp Canal Company have the honour, in obedience to the requisition of the Board of Public Works, to submit a state of the affairs of the company to the 30th ultimo. The detailed manner in which this is required to be made, exhibits at one view, not only the gross amount expended on their improvement, but the particular objects to which it has been applied; and renders unnecessary a minute or explanatory statement.

It may be satisfactory to the Board, however, to learn what has been done within the year, and what remains to be accomplished, to ensure an uninterrupted intercourse and perfect navigation between the waters of North Carolina and Virginia. With a view to the attainment of this desirable object, contracts were entered into early in the year, with persons producing respectable testimonials of their competency to comply with their engagements, for the completion of the entire work by the first day of January next. In the well-founded expectation indulged in by the Directors, that these contracts would be strictly complied with, they regret to have to say that they have been disappointed. The scarcity of labour, together with the want of skill and good management on the part of some of the contractors and sub-contractors, have produced a failure, and compelled the company to close their labours, without having accomplished their object within the *season* for work in the Swamp. It will be the duty of the Directors to provide against the first, and guard against the second cause of disappointment, by adopting all proper and necessary measures, for conducting their operations during the next year. This will be done; and greater assurance may be entertained, that the work under their management will be fully completed within the year; inasmuch as their labors will be diminished, by the quantity of excavation and masonry executed this season, which together, are equal to three-fifths of the whole work necessary to complete their canal on a scale affording six and a half feet of water, at the re-commencement of their operations in May last. The comparatively small quantity of work which remains to be performed, gives confidence to the Directors, in their ability to perfect their navigation in the approaching season for operations in the Swamp; and their funds being sufficient for that object, every exertion will be made to ensure success.

GEORGE M'INTOSH, } Directors.
JOHN TABB, }

Norfolk, December 8th, 1827.

◆

State of the Dismal Swamp Canal Company, November 30th, 1827.

Capital stock subscribed:			
By individuals,		$96,000 00	
By the State,		64,000 00	
By the U. States,		150,000 00	
All paid in,			310,000 00
Amount expended in the work from its commencement:			
Real estate acquired,		3,211 40	
Old account of expenditures,		442,315 99	
Account of discount and interest,		61,146 48	
New expenditures,	19,456 48		
Paid John Grant, contractor,	2,310 05		
Paid John Adams, contractor,	15,564 11		
Paid C. Hammill, contractor,	16,726 40		
Paid E. Shaw, contractor,	2,000 00		
Paid A. Talcott, Engineer,	1,350 00		
		57,407 04	
			564,080 91

Debts due by the company:		
To sundry individual loans,	12,944 23	
To Board of Public Works, principal,	80,000 00	
To Banks, on personal security,	46,000 00	
To Banks, stock borrowed,	50,000 00	
To Farmers' Bank, cash account,	11 70	
To Bank of Virginia, cash account,	297 61	
		189,253 54
Debts due to the company:		
By Bank of the U. States, old account,	1,192 15	
By ditto, account of the Board,	6,184 70	
By D. M. Curtis,	294 22	
		7,671 07
Income, say:		
Toll account, 30th November, 1826,	136,455 68	
Since, to 30th November, 1827,	7,635 76	
	144,091 44	
Received from Yates & M'Intyre, the three first instalments for the privilege of the lottery,	10,500 00	
		154,591 44
Balance of money on hand, say:		
Cash account,	2 50	
New subscription fund,	82,090 50	
		82,093 00
Expenses during the last year:		
For improvements and repairs,	55,633 11	
Paid officers' salaries, and collecting tolls,	1,823 71	
		57,456 82
D. M. Curtis, collector, to 30th November, 1827, inclusive,	587 50	
H. Garrett, overseer,	571 72	
Harper, keeper of Deepcreek lock,	112 08	
Keeper of Wilkins lock,	69 86	
Keeper of North-west lock,	79 85	
Keeper of Spence lock,	37 72	
Keeper of South out fall lock,	102 72	
Carried forward,	1,561 45	

Brought forward,	**1,561 45**	
Toll-office servant,	**162 26**	
Alex. Feret, accountant, to 31st December, 1826,	**100 00**	
		1,823 71

Norfolk, November 30th, 1827.

A. Feret, *Accountant.*

JOHN TABB,
GEORGE M'INTOSH,
Directors.

FAIRFAX TURNPIKE COMPANY.

Washington, 29th November, 1827.

Sir,

In reply to your favor of the 5th October last, I have the pleasure of referring you to my letter to you of December 1, 1826, which exhibits a view of the state of the affairs of the Fairfax turnpike company at that day, and which since remains unchanged, no tolls having been received by me, or dividends declared by the company. The toll-gatherer receives, it is believed, all the tolls as his compensation, under the direction of a committee, who have made no report during the last year, and who are also charged with making the requisite repairs.

I am respectfully,
Your obedient servant,
JOHN H. REILY, *Treasurer.*

To J. Brown, Jr. 2d Auditor of Virginia.

FAUQUIER AND ALEXANDRIA TURNPIKE COMPANY.

ALEXANDRIA, 8th Dec. 1827.

DEAR SIR,

I beg leave to transmit you herewith enclosed, the annual statement of the Fauquier and Alexandria turnpike company, which should have been sent on before, but has been delayed in consequence of the absence and detention, attending court in Winchester, of the Treasurer, who being on business appertaining in part to the company, could not possibly return in time prescribed by law, to send on this document. I hope the company will be excused for this unavoidable delay.

Respectfully, I am, Sir,

Your obedient servant,

J. MORGAN, *Treasurer.*

James Brown, Jr.

◆

Return of the state of the Fauquier and Alexandria Turnpike Company, from 1st November, 1826, to 1st November, 1827.

Amount of capital stock subscribed,	$70,600 00	
Of which has been forfeited according to law,	18,300 00	
leaving, ———		52,300 00
Amount subscribed by the Board of Public Works,		30,000 00
Amount of payments by individuals,		62,651 00
Amount of payments by Board of Public Works,		30,000 00
Amount due by Board of Public Works,		000 00
Amount due by individual stockholders,		7,549 00
Amount of capital expended on the road,		108,026 00
Amount of tolls received from 1st November, 1826, to 1st November, 1827,		1,225 97
Amount expended out of tolls,		1,225 97
Officers' salaries, and expenses of collecting tolls, viz:		
4 toll-keepers,		520 00
Superintendent,		250 00
Treasurer,		250 00

Amount of debts due by the company;	21,875 93
Amount of debts due the company, other than stockholders,	000 00
Dividends,	000 00

REPORT.

The operations on this road during the last year, have been principally confined by the President and Directors, to the taking up, re-laying and repairing, upon M'Adam's plan, the old part of the road leading from Buckland to its intersection with the Little River turnpike; the object being to make it correspond with, and equal to, the new road from Warrenton to Buckland, which is now entirely completed, and is acknowledged to be the best road in Virginia. More than five miles of the old road have been converted into a smooth pavement upon M'Adam's plan, at an expense not exceeding $2000 per mile, and it is greatly to be desired that the remainder of it, about 15 miles, could be thus completed. The company are using every effort in their power to procure funds to be applied exclusively to this object, well knowing that until it is accomplished, there are no hopes of any profit to be derived from its stock.

J. MORGAN, *Treasurer.*

November 1, 1827.

FALLS-BRIDGE TURNPIKE COMPANY.

Return of the state of the Falls-Bridge Turnpike Company, on the 3d day of December, 1827.

Capital subscribed by individuals,	56,521 40
Subscribed by the Board of Public Works,	32,000 00
Aggregate of requisitions made on individual stockholders,	56,521 40
Amount paid by individual stockholders,	52,269 42
Amount due from individual stockholders,	4,251 98

Amount due by the Board of Public Works,		6,000 00
Amount expended in the work,		76,306 29
Debts due by the company,		23,642 39
Debts due to the company, other than on account of stock,		000 00
Tolls received from the 3d December, 1826, to the 1st December, 1827,		1,185 02
Income from rents and other sources,		000 00
Expended in improvements and repairs,		6,311 37
Officers' salaries, and expenses of collecting tolls:		
Treasurer, per ann.	$ 50 00	
Toll-keeper,	175 00	
Superintendent,	80 00	
per ann.		305 00
All other expenses, and for what:		
President, Directors, Superintendent's expenses going on the road, and interest,		287 43
Dividends declared, and when,		000 00
Balance of money in hand,		000 00

* * *

OFFICE OF THE FALLS-BRIDGE TURNPIKE COMPANY,
6th December, 1827.

SIR,

Enclosed I have the honor to hand you the annual report of the affairs of this company. It gives me pleasure to add, that a week or ten days of favorable weather will enable the contractor to complete this road, from Difficult Run to the intersection of the Leesburg turnpike road at Drane's tavern.

With great respect,
Your most obedient servant,
C. SMITH, *President.*

To J. Brown, Jr. Second Auditor.

* * *

Extract of a letter received 23d December, from the President.

"In my report in the early part of this month, I mentioned that a few days would complete the road. I can now add, for the satisfaction of the Board of Public Works, that the work is entirely completed, and in a manner quite satisfactory to our Board. "C. SMITH, *President.*"

JRG TURNPIKE COMPANY.

n *state of the Leesburg Turnpike Road Company, up to 1st July,* 1827.

Capital subscribed:		
By individuals,		50,400 00
By the State, or Board of Public Works,		33,600 00
Aggregate of requisitions made on individual stockholders,		50,400 00
Amount paid by individual stockholders,		47,754 01
Amount due from individual stockholders,		2,645 99
Capital expended in the work,	all.	
Tolls received from 1st July, 1826, to the 1st July, 1827,		4,304 75
Expenditures during the same period, in improvements and repairs,		1,769 81
Amount of curtail and discount paid to the Branch Bank of the Valley at Leesburg,		617 33
Officers' salaries, and expenses of collecting tolls, &c.:		
President,	$100 00	
Directors,	116 67	
Treasurer's commission for receiving and paying out,	100 00	
Two toll gatherers, $150 each,	300 00	
		616 67
All other expenses:		
For expenses of the Directors, while on business of the company,	6 50	
Printing,	25 75	
Surveying,	25 00	
Fuel,	14 50	
		71 75
Dividend declared, and payable 15th July, 1827, being 3 per cent. on the amount paid in by individual stockholders,		1,437 78
Debts due by the company:		
To the Branch Bank of the Valley at Leesburg,		2,500 00
John M'Aleer & Co. for making road,		309 82
James M'Kendrick & Co. ditto,		53 34
Debts due to the company, other than from the stockholders,		00 00
Balance of toll money,		783 00

SAMUEL M. EDWARDS, *Treasurer.*

Leesburg, December 4, 1827.

LITTLE RIVER TURNPIKE COMPANY.

ALEXANDRIA, 1st month 8th, 1828.

J. Brown, Jr. Secretary to the
Board of Public Works, Richmond.

Agreeably to thy suggestion, I have deferred forwarding a copy of the report of the President and Directors of the Little River Turnpike Company, made to the stockholders, in general meeting, on the 3d day of January last year, till the present time, in order to forward with it the report of the present year, made on the 4th instant; and I now have the pleasure of handing to thee herewith both reports, which were, at the time of presentment, received and unanimously adopted by the stockholders, in general meeting. On the 2d day of April last, the Board met, in conformity with the report of 1827, and declared a dividend of 4 per cent. payable on the 5th of same month, of which due notice was given by advertising in the newspapers of Alexandria, Winchester and Leesburg.

In consequence of the heavy expenditures last year, occasioned by the great improvements making in our road, and the decrease in amount of tolls received, owing to the short crops in the upper country, the prospect for dividend on the first of April next, is not very flattering. I do not calculate on our being able to divide more than three per cent.

I remain, very respectfully, thy friend,

PHINEAS JANNEY, *President*
Little River Turnpike Company.

REPORT FOR 1826.

Copy of the report made by the President and Directors of the Little River Turnpike Company, to the stockholders, viz:

That they have examined the Superintendent and Treasurer's accounts and vouchers, and find that the receipts for tolls for the year ending 31st December, 1826, amount to	16,401 27
To which add balance in the Treasurer's hands, per his account for 1825,	2,590 30
Carried forward,	18,991 57

Brought forward,		18,991 57
ere has been expended by ma Ayre, superintendent of the le road, (including $400 paid towards a new bridge erected over Little river, at the joint expense of our company and the Ashby's Gap turnpike company, and including his salary, at the rate of $800 per annum,) the sum of	6,315 61	
Paid salaries of all the gate-keepers,	1,550 00	
Do President, $150; four Directors, $75 each,	450 00	
Do Treasurer's comm'n on $16,401 27 cents, at 2 per cent.	328 02	
Do compensation for collecting from gate-keepers, &c.	40 00	
Do expenses of stockholders at general meeting,	50 50	
Do machine for riddling gravel,	49 33	
Do picks and hammers for breaking stone,	15 75	
Do clerks' fees, printers' bills, hack hire, and expenses of the Directors, and pay to a gate-keeper,	73 48	
Do Lewis Suddith, for work done in 1825, and not settled for,	24 00	
Dividends paid to stockholders,	7,532 30	
		16,428 99
Leaving in the Treasurer's hands, as per account examined, a balance of		2,562 58
There is property belonging to, and debts due to the company, as per schedule exhibited by the Treasurer, supposed to be worth		332 17
		2,894 75
The company owe dividends, payable in cash,	875 73	
And for dividends, payable in stock at par value,	398 00	
		1,273 73
Funds on hand,		$1,621 02

The President and Directors further report, that the balance as stated, say $1,621 02, now on hand as surplus, has accrued since the first day of April last year, when the last dividend was declared; and that they now take the liberty of recommending to the stockholders, to confirm the orders of the two last years, authorising and directing the Board to make such dividend on the first day of April next, as the state of the funds may justify.

Agreeable to a resolution of the stockholders at their last annual meeting, the President and Directors now report:

That after due deliberation, they made up their minds that the ultimate interest of the company, as well as the immediate interest of the public, would be promoted by putting the road into a complete state of repair, upon what is called the M'Adam plan; and to enable them to carry their views into effect, it became necessary to procure a person as superintendent, that was practically acquainted with such work, and that could devote his whole time to the superintendence of the road, by which means, the Board was of opinion that advantage would result to the company, by changing the system so as to have but one superintendent; and in conformity, the Board employed Thomas Ayre to superintend the whole road, for the salary of $800 per annum, and adopted the M'Adam system in all repairs made on the road this season, which has been principally confined to the lower section, comprising about eighteen miles. The result has been such as to answer their most sanguine expectations, and to convince the Board of the propriety of continuing the same system under the present superintendent, till the whole road is made firm and smooth; after which, the annual expense for repairs will be reduced. For particulars as to the work done this season, the Board beg leave to refer the stockholders to the superintendent's report herewith handed in.

All of which is submitted to the company.

PHINEAS JANNEY, *President.*
CHARLES LEWIS,
GEORGE CARTER,
REUBEN JOHNSON,
WM. H. FITZHUGH, } *Directors.*

A true copy.

JONAH THOMPSON, *Treasurer.*

Alexandria, January 3, 1828.

REPORT FOR 1827.

The President and Directors of the Little River Turnpike Company, respectfully report to the stockholders, that they have examined the Superintendent and Treasurer's accounts and vouchers, and find that the receipts for tolls for the year ending the 31st December, 1827, amount to			13,990 38
To which add balance in Treasurer's hands, per his account for 1826,			2,572 58
And money borrowed from the Bank of Alexandria, in July, August, September and October last, to prosecute work on the road, when but little toll was received,			3,397 26
			19,960 22
And that there has been expended by Thomas Ayre, superintendent of the whole road, including $860 24, balance paid for new bridge of stone erected over Little river, and his salary of $800, the sum of		8,809 42	
Paid the salary of all the gate-keepers,		1,550 00	
President's salary, $150; 4 Directors at $75 each, is $300,		450 00	
Treasurer's commission on $13,990 38, at 2 per cent.	279 80		
Treasurer's commission on $3,397 26, at 1 per cent.	33 97		
		313 77	
Compensation allowed him for collecting from gate-keepers,		40 00	
Robert Ratcliffe, amount of judgment, and costs of suits,		85 78	
Expense of stockholders at general meeting,		53 25	
Clerks and attorney's fees, printer's bills, hack hire, and expenses of Directors, postage, &c., per Treasurer's account,		70 93	
Dividends paid to the stockholders,		5,834 44	
Bank of Alexandria, on account of money borrowed,		2,300 00	
			19,507 59
Leaving in the Treasurer's hands, as per his account, a balance of			452 63

Brought forward,		452 63
There is property belonging to, and debts due to the company, as per Treasurer's list, leaving out doubtful and bad debts,		508 54
		961 17
The company owes as follows, viz:		
To the Bank of Alexandria, balance of money borrowed,	1,150 00	
To sundry individuals, for dividends payable in stock at par,	393 92	
To sundry individuals, for dividends payable in cash when called for,	1,031 44	
		2,575 36
Making a deficiency of		$1,614 19

The President and Directors regret not being able to exhibit to the stockholders a more pleasing statement of the fiscal affairs of the company than the foregoing, shewing a deficiency of $1614 19; but, they have great satisfaction in being able to point to the work done on the road, in cutting down hills and making the stone-pavement smooth and much more permanent than it ever before has been, and saying to the stockholders, thus has your money been expended, and in such a manner as to promote the future interests of the company, as well as the community at large, in providing one of the best roads in the country, as they confidently believe will be the fact, when the whole road is completed in the same manner as is now done nearly to the 23d mile stone. The receipts for tolls during the year 1827, has been $2,410 89 less than for 1826, and the expenditures, (owing to the great quantity of work done) has amounted to $2,493 81 more than for 1826. During the months of June, July, August and September, the receipts for tolls fell so far short of the expenditures during that period, when much work was done, that the President and Directors found it necessary and advantageous to borrow money rather than suffer the work to stop, deeming it of the utmost importance to proceed as fast as practicable in making the road complete, upon what is called the M'Adam plan, which the present Superintendent appears to understand well, as the work shews. Under the existing order of the stockholders, in general meeting, it will be the duty of the President and Directors that may be elected to manage the affairs of the present year, to m [illegible] dividend on the 1st day of April next ensuing, as th [illegible] of the funds may then justify. For further particulars relative to the work done, and materials prepared for the road during the present year, the President and Directors beg leave to refer the stockholders to the report of the Superintendent herewith handed in, by which it appears there is a large amount in materials on hand ready for use.

All of which is respectfully submitted.

PHINEAS JANNEY, *President.*
CHARLES LEWIS,
REUBEN JOHNSON,
GEORGE CARTER,
WM. H. FITZHUGH.

Alexandria, January 4, 1828.

LYNCHBURG AND SALEM TURNPIKE COMPANY.

LYNCHBURG, 21st December, 1827.

James Brown, Jr Secretary to the
Board of Public Works.

SIR,

Agreeably to the directions of an act of the General Assembly of Virginia, I herewith transmit the annual report of the Lynchburg and Salem turnpike company, exhibiting the state of their affairs. The fifth section of the road, reaching to the town of Liberty, twenty-five miles from Lynchburg, has been completed, as anticipated in the last report. Three expensive bridges have been constructed on the line of the road, in the first, fourth and fifth sections, and the road has been generally made in a permanent manner, with a pavement of quartz or flint rock, from seven to ten inches deep. The heavy expense in constructing the road and bridges, with the damages assessed to the owners of land, will absorb all, or nearly so, the funds of the company, including the sum of $ 30,000, subscribed by the Board of Public Works on behalf of the State. The accounts of the contractors with the company not being settled, it is impossible to state whether any funds, and if any, to what amount, will be left after paying all demands against the company. In this state of affairs, it will be for the Board of Public Works to decide whether the company shall be compelled to pave the road any farther. It was stated in the last report, that a respectable dividend might be reasonably calculated from the tolls, for the six months ending on the 12th June last. Upon looking, however, into the state of the funds, it was found that the Directors had, at some previous board, declared dividends, without leaving a sufficiency to pay for the repairs of the road, so that, after making up those deficiencies, there was remaining on the 12th June last, the sum of about $ 1,200 only, out of which one half of the repairs of the twelve months should be deducted. In this state of things, the Directors determined to declare no dividend. It is proper to state, that at the time the last annual report was forwarded, this fact was not known to myself, or to the Directors of the company. The Board have declared a dividend up to the 12th instant, of three dollars, payable on each share of the stock of the company; and a question arises, whether the Fund for Internal Improvement can participate at this time, in the tolls of the road. By the 12th section of the act of the General Assembly, creating a Fund for Internal Improvement, (*Revised Code*, 2d vol. page 204,) it is enacted, "that the dividends on the stock which may be subscribed by the President and Directors of the Board of Public Works, shall go exclusively to other subscribers than the Commonwealth, until such portion of the stock of those subscribers, as shall have been actually paid in, shall have netted to them *six per cent. per annum*, from the specified time of such payment." By a statement marked A. herewith enclosed, it appears that the legal interest on the payments made by the stockholders, on each share, up to the 12th instant, amounts to the sum of $ 31 47; whereas, the dividends received by them on each share, with interest on the same up to the same period, amounts to the sum of $ 19 79 only; leaving a deficiency of $ 11 68, on each share; until which amount is made up by future dividends, the Fund for Internal Improvement cannot participate in the tolls, if I am correct in the view which I have taken of the subject.

The Directors have made this year a requisition on the stockholders, of ten dollars on each share of stock, leaving a balance of five dollars only, to complete the whole payment for the stock.

Wm. RADFORD, *President.*

Ret state of the Lynchburg and Salem Turnpike mpany, 1st day of December, 1827.

Capi ibed by individuals, 739 shares, at $10			73,900 00
Capital subscribed by Board of Public Works, 300 shares, at $100 each,			30,000 00
Aggregate of requisitions made on individual stockholders, $85 on each share,			62,815 00
Amount paid by individual stockholders,			61,814 03
Amount due by individual stockholders,			1,000 97
Amount due by Board of Public Works,			nothing.
Amount expended in the work from its commencement,			99,746 06
Debts due to the company, other than on account of stock,			none.
Debts due by the company,			5,581 80
Income during the year ending 30th November, 1827, viz:			
From tolls,			6,390 24
Expenditures during the same period, viz:			
For repairs,		3,695 37	
Officers' salaries, viz:			
Clerk to the Board of Directors,		80 00	
Treasurer and book-keeper,		249 14	
Expenses of collecting tolls, viz:			
Toll-gatherer on 1st section,	300 00		
Ditto 3d ditto,	200 00		
Ditto 4th ditto,	200 00		
		700 00	
			4,724 51
Other expenses,			000 00
Dividends,			000 00
Balance of money in hand,			2,634 11

ALEXANDER TOMPKINS, *Treasurer.*

* * *

At a meeting of the President and Directors of the Lynchburg and Salem turnpike company, at Lynchburg, the 20th December, 1827:

Ordered, That the annual return of the state of this company to the Board of Public Works, be certified, and that the seal of this corporation be affixed thereto.

JOHN M. GORDON, *Clerk.*

MANCHESTER AND PETERSBURG TURNPIKE COMPANY.

To J. Brown Jr. Secretary of the
Board of Public Works.

Sir,

According to the provisions of the various acts of Assembly, the Manchester and Petersburg turnpike road was finished and received by the commissioners, on the 12th of May last.

Since that time, fifteen labourers and eight horses have been employed in making repairs, so that the whole may now be considered in very good order.

It will hardly detract from the character thus given of it, that there are some detached spots of the part exempted from gravelling, found to be softer than was expected, and to need a slight coat of gravel. So far as this improvement may be deficient at the end of the year, it is the purpose of the Directors to supply it, either by keeping a small force still upon the road, or having it done by special contract.

The whole expense incurred in finishing the road, to the 12th of May, and exclusively of the repairs since given it, amount to $ 92,375. This result has in part been drawn from assumed data, some of the claims not having been rendered; but it is believed to deviate very little from the truth; and when the Directors shall have farther light shed upon the subject, they will deem it their duty to communicate the corrected result.

The amount of capital subscribed, including that held by the Board of Public Works,	76,000	00
Paid by individual stockholders,	63,479	00
Amount paid by the Board of Public Works,	8,000	00
Lost by insolvency,	4,521	00
Tolls received and due, (being a very small part) from Dec. 2d, 1826, to Dec 2d, 1827,*	3,906	42
Total expenditures, from the beginning to the end of the year 1827,	95,571	63
Debts due by the company,	12,952	42
Received, settled and paid away, including the tolls,	82,619	21

---

* The company have as yet forborne to collect toll for the 3d section, and the stages run for $600 per annum; whereas, the legal toll would be $1,460.

Annual salaries:

To the clerk and accountant, including office rent, &c.	125 00
Two toll-gatherers,	600 00
An overseer,	190 00

I am, very respectfully,
Your obedient servant,
JAMES HENDERSON.

5th December, 1827.

POTOMAC COMPANY.*

OFFICE OF THE POTOMAC COMPANY,
Georgetown, 10*th Feb.* 1828.

To J. Brown, Jr. Esq. Secretary to the Board of Public Works of Virginia, in Richmond.

SIR,

I beg leave to enclose you the statement of the monied affairs of the Potomac Company, made up to the 1st August last, that being the period at which the accounts of the company are annually stated.

This account was long since prepared, was accidentally mislaid, has been re-copied, and is now transmitted, too late, it is feared, for the purpose of insertion in the Annual Report of the Board of Public Works. This inadvertence requires an apology, and I pray your excuse.

I remain, very respectfully,
Your most obedient servant,
J. MASON,
Pres't Potomac Comp'y.

---

* This report was not included in the report of the Board of Public Works to the General Assembly, having come to hand subsequently.

Return of the state of the Potomac Company, to 31st July, 1827.

Capital subscribed by the State of Virginia,		55,994 40	
Capital subscribed by individuals,		299,116 71	
			355,111 11
Aggregate of requisitions made on stockholders,			355,111 11
Amount paid in by stockholders,			336,551 10
Amount due from do.			932 20
Amount expended in the work, in repairs, in salaries and expenses, and in interest actually paid,			739,904 97
Debts due by the Company:			
Principal,		140,301 27	
Interest,		61,096 90	
			201,398 17
Debts due to the company, other than on account of stock,			17,044 40
Income during the year, ending 31st July, 1827:—Tolls,		10,821 78	
Rent,		126 00	
			10,947 78
Expenditures during the same period, viz:			
For improvements and repairs,		2,888 22	
For salaries: To Treasurer,	600 00		
Collector at Great Falls,	600 00		
Gate keeper at Little Falls,	400 00		
Directors' attendance,	133 33		
		1,733 33	
For expenses collecting tolls, viz:			
Hire of hands,	264 50		
Provisions, fuel and cooking,	190 46		
Medicine and medical attendance,	22 62½		
Clothing,	58 68¼		
Taxes to Virginia,	7 04		
Incidental,	27 82½		
		571 13¼	
For other expenses: Office rent, fuel, law charges, stationery, &c.		370 57¾	
For debt: Principal 1129 42, with		997 45	
Interest,		4,075 38	
			10,636 10

ce of money in hand,		6,687 69
end declared, 2d Aug. 1802,		3,890 00
Note. he difference between "the aggregate of r tions made on the stockholders,"		355,111 11
and t t paid by do.		336,551 10
arises loss on the sale of United States' 6 per cent. Stock, taken at par from the State of Maryla as its subscription of 130 shares, at £130 s ing, in the year 1799,	5,551 18	
"T alan unpaid on 30 shares rfeited to the c y,"	12,076 62	
"T nt due by individual ers,"	932 20	
		18,560 01

E. E.

ROBERT BARNARD,
Treas'r Potomac Comp'y.

Office of the Potomac Company,
Georgetown, 1st Aug. 1827.

RICHMOND DOCK COMPANY.

RICHMOND, December 5, 1827.

James Brown, Jr. Secretary to the
Board of Public Works.

SIR,

In the delusive expectation that they would realize some funds from the lottery authorized for the benefit of the Richmond Dock company, by act of Assembly of —— last, the President and Directors planned their operations for the last year on a scale of expenditure exceeding the means of their income from tolls, to meet. The act authorising the lottery, makes no provision for the Dock company to draw it, and a sale was rendered impracticable by the passage of an act by the Legislature of the State of New York, prohibiting the sale of foreign lottery tickets within that State. That the favorable intentions of the General Assembly may be rendered availing, it will be necessary to alter the law so as authorise the Richmond Dock company, under proper checks and restrictions, to draw the lottery; and an application to that effect will be presented at an early day of the session, to the success of which application the Board of Public Works are respectfully requested to contribute their exertions. The inner wharfing below the lock at Rocketts, has been, during the year, raised to nearly its intended height, and the south or outer wharfing has been extended 325 feet. These were expensive, but indispensable improvements; experience having demonstrated, that without them, the constant labour of the dredging machine would be insufficient to preserve the necessary depth of water.

The dredging machine, propelled by a steam-engine of sufficient power, and with a force of between fifty and sixty hands, has been constantly and advantageously employed in deepening the channel of approach; the sand from which was used to fill in the new wharfing. The depth of water below the lock being now sufficient, and a full confidence being entertained, that the new wharfing will for a long time prevent any material change, the machine has been brought into the basins, where, if means can be commanded, it will be required to excavate during the whole or the greater part of the ensuing year.

The Treasurer's statement, hereto annexed, and prayed to be taken as a part of this report, shews the amount of tolls which accrued from the 30th day of November, 1826, to the 1st day of December, 1827, at $14,846 51.

By reference to former reports, it will be seen that the tolls which have hitherto accrued, were as follows:

From 1st February, 1823, to 1st December, 1823, $3,788 11 cents; from 30th November, 1823, to 1st December, 1824, $5,384 88; from 30th November, 1824, to 1st December, 1825, $7,835 54; and from 30th November, 1825, to 1st December, 1826, $9,121 30.

The President and Directors feel confident that the income will continue to increase, in proportion to the conveniences and facilities afforded, until the whole trade of Richmond shall centre in the Dock.

Respectfully,
J. B. HARVIE, *President*
Richmond Dock Company.

turn of the state of the Richmond Dock Company, on the 5th day of December, 1827.

ital subscribed,	250,000 00
of requisitions made on stockholders,	250,000 00
e by individual stockholders, (as here- eported and explained,)	4,615 93
expended in the work,*	368,800 50
s received from 30th November, 1826, to 1st December, 1827,†	14,846 51
Officers' salaries: Superintendent, $ 1,000; Collector and assistant, $ 1,050; Clerk and Treasurer, $ 500; Dock-master, $ 500; Lock-keeper, $ 250; and Overseer, (temporary) $ 360,	3,660 00
ebts due by the company, other than the amount ceived on loan from Board of Public Works,	45,362 28
ue to the company, otherwise than on t of stock,	516 50

E. E.

HILARY BAKER, *Treasurer*
Of the Richmond Dock Company.

---

* All expenses, of whatsoever description, are herein included.

† The tolls which accrued in November, are assumed at $ 1,300; they may amount to a few dollars more, the Collector not having fully made up his account for that month.

ROANOKE NAVIGATION COMPANY.

WELDON, 29th November, 1827.

SIR,

I herewith transmit to you, for the use of the Board of Public Works of the State of Virginia, the annual report of the Board of Directors to the stockholders of the Roanoke Navigation company, and a return of the state of the said company, on the 12th instant.

I am, respectfully, your obedient servant,

A. JOYNER, *Secretary*
to the Board of Directors.

J. Brown, Jr. Second Auditor,
Ric l, Va.

The report of the President and Directors to the stockholders of the Roanoke navigation company, respectfully represents: That the operations of the company have been directed to the improvement of the Staunton river, commencing at a point a little below Brooke Neal, and terminating at the upper end of Long Island, which have resulted in rendering navigable by sluices, towing paths, &c. eleven and a half miles of the very worst part of that river. For further information as to the difficulties overcome, the character and execution of the works, and for other particulars, the stockholders are referred to the report of Samuel Pannill, Esquire, the Superintendent of the works for the present year. The report of Colonel Andrew Joyner, the Superintendent, shews that the contemplated improvements on the Lower Roanoke, have been completed; that there is now, at the lowest water, and the worst bars, from 3 to 4 feet, and at a common winter water, from 7 to 8 feet, making it good steam-boat navigation. For a more particular account of the operations on this portion of the river, you are referred to the above-mentioned report.

We are informed, (though not officially,) that the Dismal Swamp canal is in a state of forwardness that justifies the expectation that it will be completed early in the course of next year. And, while we are thus cheered with the prospect of a speedy outlet to the Atlantic, we are encouraged to hope, from information contained in a letter from the Engineer of the State of Virginia, to one of our body, that ultimately, and at no very distant period, we shall see the waters of the Roanoke united with those of the west.

The state of the financial concerns of the company will be disclosed in the report of the Treasurer.

JAMES BRUCE, *President pro tem.*

13*th November*, 1827.

◆

Return of the state of the Roanoke Navigation Company, 12th November, 1827.

Capital subscribed:		
By individuals,	$282,000 00	
By State of Virginia,	80,000 00	
By State of North Carolina,	25,000 00	
		387,000 00

Aggregate of requisitions made on stockholders, 96 per cent.			371,520 00
Amount paid by stockholders,		350,967 84	
Amount due from ditto,		20,552 16	
Amount due from the State of Virginia,		000 00.	
Amount due from the State of North Carolina,		000 00	
			371,520 00
Amount expended in the work to the 11th Nov'r 1826, including real estate, negroes, and other property, purchased for the use of the company,		341,283 89	
Expenditures during the year ending 12th November, 1827, viz:			
For improvements on Staunton river,		11,801 12½	
For improvements on Roanoke river, below the great falls,		1,114 57	
For repairing canal,		284 83	
Amount paid for seven negro men,		2,672 16	
Total amount expended in the work from its commencement,			357,156 57½
On the 11th November, 1826, the balance in the Treasury amounted to		13,784 83	
Amount collected from stockholders since that time,		5,128 61½	
Amount received for shingles sold,		26 20	
Amount collected for tolls on produce transported on the canal,	52 07		
Deduct expenses of collecting tolls,	15 62		
		36 45	
		18,976 09½	
Deduct expenditures for the year, ending 12th November, 1827, as above stated,		15,872 68½	
Balance in the Treasury,			3,103 41
Debts due to the company,			2,519 45
Debts due from the company,			5,470 58

Officers' salaries:	
Superintendent on Staunton river,	500 00
Superintendent on Roanoke below the great falls, and on the canal,	500 00
Treasurer,	400 00
Secretary to the Board of Directors and the general meetings of the company,	300 00

A. JOYNER,
Treasurer.

12*th Nov.* 1827.

SLATE RIVER COMPANY.

Return of the state of the Slate River Company, on the 1st day of December, 1827.

Capital subscribed by individuals,		$13,100 00
by the State or Board of Public Works,		6,900 00
Amount of 1st requisition on individual stockholders, at $20 per share,		2,620 00
Amount of 2d requisition on individual stockholders, at $12 per share,		1,572 00
Amount of 1st requisition made of the Board of Public Works, being 25 per cent. on the stock,		1,725 00
Amount of 2d requisition made of the Board of Public Works,		483 00
Amount paid by individual stockholders,		3,624 00
Amount due from ditto,		568 00
Amount expended in the purchase of five negro men,	1,900 00	
And other sums expended in the work from its commencement,	3,420 86	
		5,320 86
Amount received for the hire of four negro men,		235 00
Balance of money in hand,		746 14

Debts due by the company, not ascertained.

BUCKINGHAM COURT-HOUSE,
1st December, 1827.

SIR,

The foregoing report furnishes a statement of the financial condition of the Slate River company. In consequence of the pending of a suit, first in the Superior Court of Chancery, and since in the Court of Appeals, by which the company were arrested in their operations, no progress, farther than that heretofore communicated, has been made in their works. The condition of their improvements has undergone no change, other than that necessarily wrought by the lapse of time, on timbers exposed to all the influences of the seasons and the weather. Respectfully your's,

ARCHIBALD AUSTIN, *President.*

SAM'L FORD, *Secretary.*

To James Brown, Jr. Secretary
to the Board of Public Works.

STAUNTON AND JAMES RIVER TURNPIKE COMPANY.

A return of the state of the Staunton and James River Turnpike Company, on the 24th day of November, 1827.

Capital subscribed by individuals,		$30,000 00
by Board of Public Works,		20,000 00
Aggregate of requisitions made on stockholders,		21,000 00
Amount paid by individual stockholders,		15,105 23
Amount due from ditto,		5,894 77
Amount due by the Board of Public Works,		15,000 00
Amount expended in the work from its commencement, and paid,	30,689 42	
Amount of balances due to contractors, including interest,	8,096 54	
		38,785 96
Debts due by the company, ascertained,	18,265 94	
Debts due by the company, not ascertained, will probably be	1,800 00	
		19,065 94

Income during the year ending the 15th July, 1827:	
From tolls, (see note 1st.)	2,085 69
From rents, none.	
From other sources, none.	
Expenditures during the same period, viz:	
For improvements and repairs, (see note 2d.)	
Officers' salaries:	
To toll-gate keepers,	257 99
To Secretary and Treasurer, who is the same person, 2½ per cent. on the amount of all receipts, in lieu of all other compensation for his services.	
Other expenses, none.	
Dividend declared of six per cent. on $30,000, the capital stock held by individuals, from the 15th day of May, 1826, to the 15th day of July, 1827, to be deducted out of the next requisition on the stockholders.	
Balance of money on hand the 24th day of November, 1827,	120 81

E. E.

NICH: C. KINNEY, *Treasurer.*

Note 1st.—It has been ascertained, that the sum of $2,085 69, has been received as tolls on the road from the 15th day of May, 1826, (the day of opening the first gate,) to the 15th day of July, 1827, the day on which the first quota from the Board of Public Works became due. Nearly one-half of this sum has been appropriated in discharge of the purchase of the unexpired term of the charter of the Rockfish Gap turnpike company, which the Directors found it necessary, and to the interest of the company, should be acquired, and which was done under the authority of an act of the Legislature, passed at the last session. This purchase was made from the present keeper of the gate at Rockfish Gap, who was authorised by the Board to apply the tolls in discharge of this contract. His account not having been finally settled, a detailed and satisfactory statement of the tolls cannot, therefore, at this time, be furnished.

Note 2d.—The whole line of road was completed and received on the —— day of August last, except gravelling. The Directors have employed a Superintendent and two hands by the year, for this purpose, and keeping the road in repair. The year has not yet expired, and the accounts of the Superintendent not settled. What portion of labour and expenditure is chargeable as permanent improvement, or what as repairs, cannot now be stated.

A.

Statement shewing the items of expenditure.

ssrs. Lyman & Sandford Brown, contractors,	5,861 86
ssrs. William & Henry Chappel, do.	5,450 00
h Coffman, do.	13,832 51
hain-carriers, damages, clerk's fees, , toll house, &c.	5,545 05
d, the 24th November, 1827,	120 81
	$30,810 23

* * *

B.

t shewing the debts due from the Company, ascertained.

o srs. Browns, contractors, a balance, including interest to the 24th Nov. 1827,	2,435 93
Messrs. Chappels, contractors, balance,	50 00
Joseph Coffman, contractor, a balance with interest,	5,610 61
To the Bank of the United States, on loan on the individual responsibility of the directors,	5,000 00
To Richard Anderson, for a loan upon the individual responsibility of directors, in anticipation of the 2d instalment due from the Board of Public Works,	5,000 00
To Sarah Bell, and interest to the 24th November, 1827,	254 40
	$18,350 94

SHEPHERDSTOWN AND SMITHFIELD TURNPIKE COMPANY.

SHEPHERDSTOWN, November 24, 1827.

To the President and Directors
of the Board of Public Works.

GENTLEMEN,

Enclosed is a return of the state of the Shepherdstown and Smithfield turnpike company, to the 1st November, 1827.

Your's, very respectfully,
JAMES M'MURRAN.

* * *

Return of the state of the Shepherdstown and Smithfield Turnpike Company, from 1st January, 1826, to November 1st, 1827.

Capital subscribed by individuals,		$28,111 75
by the State or Board of Public Works,		18,575 00
Aggregate of requisitions made on individual stockholders,		28,111 75
Amount paid by individual stockholders,		28,111 75
Amount paid by Board of Public Works,		nothing.
Amount due from individual stockholders,		do.
Amount due from Board of Public Works,		18,575 00
Amount expended in the work from its commencement,		28,111 75
Debts due by the company,		nothing.
Debts due to the company, other than on account of stock,		nothing.
Income during the above time, from 1st January, 1826, and ending November 1st, 1827:		
From tolls,	537 00	
From rents,	00	
		537 00

penditures during the same period, viz:

For improvements and repairs,	00 00	
Officers' salaries:—For Secretary,	30 00	
For Treasurer,	16 00	
For Toll-gatherer,	183 33⅓	
		$229 33⅓
Other expenses,	nothing.	
Dividend declared,	do.	
Balance of money in hand,	do.	

DANIEL BUCKLES,
Treasurer.

SNICKER'S GAP TURNPIKE COMPANY.

Cool Spring, Nov. 27th, 1827.

Brown, Jr. Second Auditor.

Sir,

I herewith send you the annual report of the Treasurer of the Snicker's Gap turnpike company, which shews the balance on hand arising from tolls. The road is now in good order, and the company is in receipt of full toll.

Your's, with respect,
D. CASTLEMAN, *President*
of the Snicker's Gap Turnpike Company.

◆

Return of the state of the Snicker's Gap Turnpike Company, on the 8th day of April, 1827.

Capital subscribed by individuals,	$64,375 00
by the State, or Board of Public Works,	20,000 00
Aggregate of requisitions made on individual stockholders,	64,375 00
Amount paid by individual stockholders,	63,254 46
Amount due from individual stockholders,	1,120 54
Amount due by the Board of Public Works,	000 00

Amount expended in the work from its commencement, (exclusive of funds from the Board of Public Works,)		83,438 44
Debts due by the company,		15,557 49
Debts due to the company, (other than on account of stock,)		000 00
Income during the year ending 8th April, 1827, viz:		
From tolls,	1,378 00	
From rents,	000 00	
From other sources,	000 00	
		1,378 00
Expenditures during the same period, (exclusive of funds from the Board of Public Works,) viz:		
For improvements and repairs,		1,530 08½
Officers' salaries: Treasurer's commission,		27 56
Expenses collecting tolls:		
Gate-keepers' salaries, employed part of the year,		170 00
Other expenses:		
For the Board, at the several meetings,	19 72½	
For printing,	3 00	
For agents' travelling expenses,	50 50	
For clerk's and sheriff's notes,	12 72	
For writing paper 75-100, and postage 20-100,	00 95	
		86 89½
Dividends declared, and when payable,		00 00
Balance of money in hand,		326 47½

A true copy from the books of the company.

N. C. WILLIAMS,
Treasurer.

VIFT-RUN GAP TURNPIKE COMPANY.

urn of the state of the Swift-Run Gap Turnpike Company, on the 4th December, 1827.

Capital subscribed:	
By individuals,	**$69,700 00**
Board of Public Works,	**46,000 00**
Commonwealth of Virginia,	**4,100 00**
	119,800 00
Aggregate of requisitions made on individual stockholders,	**69,700 00**
Amount paid by individual stockholders,	**68,689 00**
Amount due from individual stockholders,	1,011 00
Amount due from the Board of Public Works,	00 00
Amount expended on the road from its commencement,	129,140 32
Debts due by the company, viz:	
To sundry persons for the surplus of their stock, which was sold for the instalments due thereon,	186 23
To sundry persons for negroes hired the present year,	200 00
Debts due to the company, other than on account of stock,	00 00
Income during the year ending 4th December, 1827, from tolls received,	2,932 51
Expenditures during the same period:	
For improvements and repairs,	844 79
Officers' salaries:—Secretary and Treasurer,	100 00
Overseer,	200 00
Expenses collecting tolls:—1 Gate-keeper,	200 00
1 ditto,	150 00
All other expenses,	00 00
Balance of money on hand,	1,819 68

Road finished and in good order, 36 miles.

WILLIAM ALLEN,
Secretary and Treasurer.

Office of the Swift-Run Gap Turnpike Company,
Fredericksburg, 4th December, 1827.

To J. Brown, Jr.

Sir,

I annex hereto the annual report of the Swift-Run Gap turnpike company.

Very respectfully,
Your most obedient servant,
Wm. ALLEN,
Secretary and Treasurer.

WELLSBURG AND WASHINGTON TURNPIKE COMPANY.

Report of the Directors on behalf of the State.

Wellsburg, Virginia, Dec. 10th, 1827.

Sir,

It may seem to the Board of Public Works, that the Wellsburg and Washington turnpike company have been slow in their operations to complete the work and put it under toll.

When this work was begun, it had been repeatedly announced in Congress, by the friends of the national road, that they would no longer ask appropriations of public money to keep that road in repair: they would let that road sink, or so toll it, as to keep it in repair by those who used it. Every session of Congress we have looked for the execution of this state of things: by the acts of each session we have been disappointed. From year to year, Congress has given money to repair this road. While repaired at public expense, and kept *free*, that circumstance operates, and would operate, as a bounty to travellers to forsake our road and travel on that.

Without giving any opinion, whether Congress possess constitutional powers to construct such roads, there can be but one opinion, that when constructed, they should be tolled, or otherwise left to the preservation of those who use them.

If not left to that care, the keeping them in repair operates as a decided check on individual and State enterprize; for, early in the same direction, by Virginia public pital, must be repaired by tolls. Although this has perhaps lessened our industry, while actuated encited from each annual debate in Congress, it will e any influence on the completion and tolling of the further stock the company have asked for granted, the road will doubtless be finished and under toll, before the next summer passes away.

Very respectfully,

JACOB DECAMPS,
P. DODDRIDGE.

To J. Brown, Jr. Secretary to the Board of Public Works.

* * *

Return of the state of the Wellsburg and Washington Turnpike Company, on the 6th day of December, 1827.

Capital subscribed by individual stockholders,		$11,650 00
by Board of Public Works,		5,000 00
Aggregate of requisitions made on stockholders,		16,650 00
Amount paid by stockholders, including the amount paid by the Board of Public Works,		14,967 93½
Amount due by the Board of Public Works,		nothing.
Amount due by individual stockholders,		1,984 09½
Capital expended in the work,		13,747 34
Officers' salaries: Superintendent $300, Treasurer $328, and Clerk $300,		928 00
Attorneys', Clerks' and Sheriffs' fees paid by the company,	250 24	
Deduct amount collected of defendant since,	8 44	
		241 80
Due by the company to clerk,		152 54
Cash in treasurer's hands,		203 33½

* * *

The above return of the Wellsburg and Washington Turnpike Company, has been delayed beyond the time required by law. This delay has happened not from any design to evade the law governing their conduct, together with all such incorporated companies. This company ask the indulgence of the Board of Public Works for this delay. As it has been the first, so they hope it will be the last of the kind.

By order of the Board,

JOSIAS REEVES,
President Pro. Tem.

William Patton, *Clerk.*

REPORTS
OF THE
PRINCIPAL ENGINEER,
OF HIS
OPERATIONS IN THE YEAR 1827.

SUMMARY REPORT.

RICHMOND, January 22d, 1828.

To the President and Directors of the Board of Public Works.

GENTLEMEN,

In compliance with the orders of your honorable body, I surveyed, during the past year, the North Branch of the Pamunkey in the spring.

On the 20th of May, when it appeared that the waters had sufficiently subsided for the purpose, I began the survey and examination of James and Jackson's river, with a view to the improvement of its bed, as prescribed by the resolution of the General Assembly, of the 9th March last. A very unusual succession of freshets at that time of the year, protracted this operation beyond the time which had been computed necessary for its completion.

I next proceeded to the location of the road across the Warm Springs mountain.

The succeeding operation was the survey for a road from Danville to Wythe court-house. I was prevented by a fever, contracted probably on James river, from joining this survey. All the preparatory measurements were made by Mr. W. M. C. Fairfax, my assistant.

I met him at Christiansburg, where we proceeded to a survey and examination of the country lying between the head waters of Roanoke and New river, with a view to a connexion of these two streams.

Thence we proceeded to Lynchburg, and surveyed several routes from this town to Lexington, with a view to a road between the former place and Covington; the survey from this last town to Lexington, having been made in 1826.

I also examined the Staunton and James River turnpike; the Salem and Lynchburg turnpike; the Canals at the Blue Ridge, and near Richmond, and the Cartersville bridge.

Since my return to Richmond, I was directed to survey for a rail-way from the coal-pits to James river. This duty was completed in the early part of the present month.

On all these subjects, I am preparing reports: I shall, I hope, be able to lay the most considerable of them, that on James river, to-day before you. The others are in a state of forwardness, and will soon be completed.

I am, gentlemen,
Very respectfully,
Your most obedient,
C. CROZET, *P. E.*

REPORT

ON THE

SURVEY OF JAMES RIVER.

Pursuant to the orders of the members ex officio of your honorable body, in date of the 3d of April last, directing a survey to be made of the James and Jackson's rivers, with a view to their improvement by dams and sluices, I began on the 22d May, levelling and measuring the river at the head of the pond formed by the dam at Maiden's Adventure Falls; the river being then within 1½ foot of its lowest stage, and consequently in a state sufficiently favorable to the examination of its bed.

The very next morning we were surprised to find that the river had risen about 6 feet during the night. From this time until the 12th of June, the operations were much interrupted by successive rises and falls of the water; which not only rendered the examination difficult and slow for some time, but, leaving some uncertainty as to the real elevation of the river at different places, compelled me to re-view the lower section in August, when it had about attained its low summer stage. In this last examination, by reference to frequent bench-marks made for the purpose, we ascertained correctly what the actual height of the water had been at each place, at the time of the first survey; and, consequently, how much should be deducted from the depth of the river then measured; so that the soundings recorded in the field-books, should all be lessened by a certain number of feet, indicated at the head of each page.

My instructions requiring that the survey should be conducted with a view to an improvement by sluices, as well as by locks and dams, the operations were accordingly carried on so as to embrace simultaneously all the necessary points of enquiry. Close soundings of the low water channel were taken the whole way from Maiden's Adventure up to Covington; the depth and nature of the bottom at each place were recorded; and all the eligible sites for dams described: at the same time, the corresponding distances were measured on shore, and the width of the river obtained at short intervals, particularly at the dam sites. Levelling stations were likewise taken at all the remarkable points; and, in one word, all the data and remarks were collected which might have an influence on the opinion to be formed of the expediency and cost of each system of improvement.

The results of these simultaneous examinations and measurements, are contained in six field books: the two first exhibit all that relates to the river itself; the others comprise the operations on shore. Illustrative maps are preparing from the field-notes: they consist of plans and profiles, exhibiting to the eye the various circumstances and localities described in the field-books and in this report.

In the preamble and resolution of the General Assembly, of the 9th of March last, concerning this survey, several points of examination and enquiry were particularly indicated: they have been carefully attended to; and are specially reported upon in the following pages.

SLUICE NAVIGATION.

I will, in the first place, consider what relates to an improvement by sluices.

In my report of July, 1826, of which this may be regarded as a complement, I have offered several remarks on this subject; and particularly on *the waste of power incident to this kind of navigation.* The principles relative thereto being general, and independent of localities, could receive no additional light from the survey; it would, therefore, be useless repetition to discuss anew this particular point.

It was suggested that *the expense of the improvement of James river* might be lessened, by making sluices wherever the current is gentle, so as to give *from 2½ to 3 feet depth in the driest seasons.* The river was accordingly minutely sounded; and I am sorry to report that the result has been unfavorable to this plan.

During the first period of the survey between Rock Castle and Columbia, where the idea of a sluice improvement had ever been most encouraged by appearances, not being aware that the river was gradually rising, while we were progressing upwards with the measurement, I formed hopes that, in many places, with but little labour, a sufficient depth for a good sluice navigation, upon the enlarged scale contemplated, would be easily obtained. These expectations, however, were completely overthrown, when, on reaching Columbia, it was ascertained, by reference to an old bench-mark, made at a time when the water was low, that it was now nearly 4¾ feet above its low stage. This height, cut off from the soundings obtained, left them so shallow as to discourage altogether the idea of attempting an improvement by sluices. This conclusion was confirmed by the revision made in August.

A close examination of the soundings, with the proper deductions indicated at the head of each page in the field-books, or a mere glance at the profiles prepared from them, will obviously demonstrate that the opening of sluices 2½ or 3 feet deep in the driest seasons, would require all along an enormous quantity of blasting and excavation of the bottom. This, on the profiles, is made apparent to the eye by a line drawn the whole way parallel to the surface of the river, and three feet below it. In many places of the lower section, where the fall is small, boats rub at low water with only two or three hogsheads of tobacco; and the boatmen have sometimes to use handspikes: this is the case, for instance, near *Little Elk Island*, near *Daniel's Isle;* and, of course, such places become much more common higher up the river.

In addition to the above, the following consideration, which must also have its influence in the locating of a dam and lock navigation, and was noticed in my former report, (page 400,) as particularly applicable to James river, would even render the expensiveness of a sluice improvement much greater than indicated by the soundings and profiles.

It is, I think, generally admitted, that neither of the above mentioned modes of improvements would be expedient, unless with a view to the introduction of steam as a propelling power; but a steam boat, with only three lighters of suitable dimensions in tow, would occupy a length of at least one hundred yards: such a train would require broad waters to move in, or, at least, tolerably straight and wide sluices. Therefore, the channel and sluices now used, which are frequently excessively crooked, and very narrow, would have generally to be abandoned, and straight ones made. These new channels would necessarily be cut in directions much more shallow than the track which was sounded, and most generally through solid ledges, so that a great deal more blasting and excavation would be required than the already enormous quantity indicated by the soundings, which were taken in the deepest channel. This consideration alone, even if the present sluices and channels had been found deep enough, would form a considerable objection to a sluice improvement, on the intended scale.

For this reason also, in an improvement by dams and locks, wherever smooth sheets of deep water are intersected by high ledges, a case which occurs frequently, it will generally be found more advisable to give the requisite depth by raising the water above, than by blasting through these ledges: this I have kept in view in my estimates.

It may furthermore be added, that excavating these natural ponds would be, in most cases, a perfectly useless expense; for, as they have no more fall than the artificial ponds formed by dams, after having incurred the expense of deepening them, there would still be as much fall to overcome as before; hence, an arrangement of dams, which will at the same time overcome the fall of the river, and increase the depth of the ponds, is both more judicious and economical.

The great expensiveness of a deep sluice improvement on James river, is so palpably demonstrated by the soundings, that, in that respect, it will certainly appear inexpedient.

It is, besides, doubtful, whether there would be water enough in the river, when low, to fill a sluice of the requisite dimensions, made through even a moderate fall. The sluices that have been excavated in James river, are generally narrow: I have observed some of them which collected nearly all the water of the river, and were not three feet deep throughout;* and I was convinced that it would not be practicable to graduate them with increased dimensions, so as to afford the contemplated depth.

Without saying any thing of the additional expense, besides that of excavation, which would be produced by dams and wings to confine the water within the sluices, nor of the danger that boats would be exposed to in certain stages of the river, in consequence of the erection of such works, I proceed to the last subject of enquiry relative to the system of improvement under consideration, viz: setting aside *the waste of power* and *danger* attending this mode of navigation, and admitting that there would be water enough in the river; whether, after having expended immense sums in excavating the bed, forming sluices, raising wing-walls, &c. the improvement would answer its purpose.

---

* One of the most remarkable is at *Tyree's fall*, below *Tye river*. The sluice is 8 feet wide, and collects the greater part of the water when low. The fall in it is 2¼ feet, in about 120 feet. The soundings are, at low water, (beginning at the head of it,) 3¼ feet, 2¼, 3, 3, 2½, 2½, 2. It does not appear that a broad sluice, though well graduated, could be made deep enough here.

The *want of permanency*, after their execution, is one of the greatest objections that can be urged against sluices, which are certainly, at best, but temporary improvements; and would, in general, soon be levelled off by the river, if they did not receive constant attendance and frequent renewals. In looking over the field-notes and maps, it will be remarked, that in almost every artificial sluice, though cut through rock, the soundings indicated a gravelly, and frequently a sandy bottom, particularly towards its lower end, shewing the disposition of sluices to fill up. This proves clearly and conclusively, that it is but seldom that localities would be favorable to the making of sluices that would not fill with gravel.

I state here the result of my own personal observation, as regards sluices made in ledges, whose original depth I could readily ascertain: as to those opened through gravel, I have been informed by boatmen well acquainted with them, that, as must be expected, they constantly fill up: and, indeed, I found many of them so shallow as to completely corroborate this statement. In some places, boats must actually seek deeper water, out of the course of the sluice. Particular statements, describing localities, will be found in notes appended to the estimates.

If a river always remained at the same elevation, its current would be invariable; then a sluice improvement might be attended with success, because the causes would be fixed, and their effects could be both foreseen and controlled. But, among the fluctuations to which every stream is subject, it is next to impossible, that any modification of its bed can be made to harmonize with its various elevations and changes. At low water, for instance, it winds its devious course within a narrow width, among gravelly shoals or rocky channels. A slight rise will cover all the shoals, and bring it to the foot of the beach on each side: then its current is increased and becomes more direct; at this stage it may, perhaps, intersect, at a considerable angle, its former course.

If the river continue to rise, it will soon reach the steeper banks which form its main channel: At this elevation, the irregularities of the bottom, which affected its current before, begin to lose their influence, and gravel to move along the bottom; the current acquires rapidity, and its direction is chiefly regulated by the form of the banks. At this stage, the river may already be wide where it was narrow before, and more rapid at those places which were more sluggish. Should, therefore, a sluice have been made to suit the lower stages, it may, perhaps, be crossed by the new direction of the current; and boats will then probably find it both difficult and dangerous to pass through it; and very likely it will begin to collect either gravel or sand.

If the sluices be calculated for this mean stage, a greater elevation of the river will produce new changes; its rapidity, as it rises, will approximate by degrees that of a torrent, and the force of the current being probably carried in a new direction, depositions will likewise take place in the sluices. This will particularly be the case, when a freshet, passing over the bottoms, will reach the foot of the hills, which, of course, during this state of things, will be the actual banks of the river. The current then may be so totally changed, both in its course and power, passing over islands and across bends, round which it went when within banks, that a sluice kept deep in a common stage, may, perhaps, completely fill up, without any possibility of its being again opened upon the subsiding of the high freshet, whose violence will roll gravel along, too large to be removed by a lower one from the places where it may have been deposited.

And in their turn the new channels, which may have been excavated by a very high flood, will fill up with smaller materials upon the receding of the river within its common banks, and its resuming its former course.

Since, then, every successive elevation of a stream introduces changes in its current, and consequently modifies the motion of the materials carried along its bottom, it must appear evident that very seldom a sluice can be made to suit these different stages. It is, therefore, upon a cheap scale only, and with an expectation of having frequently to deepen the sluices, that this mode of improvement can be introduced; but permanency is altogether out of the question.

It is not my object here to enter minutely into an investigation of all the causes which operate to render an improvement by sluices abortive, especially as this subject has been fully discussed in former reports: what I have said is sufficient to demonstrate the existence of such causes. The idea of improving a river by deepening its bed in places, and cutting channels through its shoals, implies an opinion that its apparent irregularities are incidental imperfections: But far from it; there is not a pool of deep water, or an accumulation of gravel, whose formation is not governed by laws as sure and as fixed as those, apparently more simple, which bring the stone thrown upwards back to the earth: our own ignorance makes all the difference, and induces us to attempt a correction of what is wisely ordained. If a natural pond of the river is deep, it is not chance which makes it so: for, if there was not a cause operating to scoop it out, the materials moved along by the stream would soon fill it up, whereas, on the contrary, these natural ponds are generally free from gravel at the bottom, and ought to be so. If a bar of gravel exists, there is a cause for its formation; otherwise, the violence of the current would soon sweep it off, as it does the bottom of the pond.

It is, therefore, evident, that a bar or accumulation of gravel cannot be successfully removed, without removing also the cause by which it is formed. But, without entering into particulars, it must appear obvious that, in general, this cause exists during the higher stages of the river, and that, consequently, if a deposition of gravel be removed, it must be formed again by the return of the same cause, unless an artificial channel could be made, confined by works, raised up to the high banks of the river. Otherwise, low wing-dams and walls, which, in a certain stage of the river, may cause a sluice to deepen, will lose gradually their influence, as the stream attains a greater height; and when the powerful circumstances mentioned above begin to operate, a sluice previously deepened may altogether fill up.

Sluices, then, being generally made, in direct opposition to the natural causes and effects enumerated above, must soon yield to the irresistible laws which govern the operations of streams: and success can be expected only, when the intention of nature is either positively assisted, or but slightly modified.

LOCK AND DAM NAVIGATION.

In this respect, I think that dams of moderate dimensions are more advisable than sluices, and that they depart less from the natural constitution of streams. For, in general, the fall of a river is not uniformly distributed, but occurs more commonly in places at ledges or gravelly bars, which hold up smooth natural ponds. These are generally deep, and almost still, while the water flows shallow and rapid over the bars; but what are these bars, whether of rock or gravel, if not in fact natural dams stretched across the stream? Cannot we, then, with some propriety, consider the artificial dams placed on these very sites, and particularly at their base, an actual substitute for the work of nature, when they do not raise the water to a disproportionate height? It should appear from this, that, if such dams be properly located, the economy of the river must be preserved: The ponds of still water will exist where they were before, and the water will pass off rapidly over each dam as it did over the bar. Its escape being then as quick as before, it is obvious that the rises of the river will hardly differ from what they were previous to the erection of the dam, unless it be raised considerably above the surface of the pond; and that, consequently, the action of the freshets upon the bottom and banks must remain nearly the same as before.

No apprehension, therefore, should be entertained as to the efficacy of the improvement in such situations, or as regards its effect upon marginal property. By reference to the plans, it will be seen that most of the dams will be located upon such sites: but, as this will not be every where the case, and it may be apprehended that, in other situations, injuries may be done to the adjoining lands, it will be proper to shew that, what is particularly said here, respecting the effect of a dam raised to overcome a fall, is likewise applicable to dams erected in other places; and that, *in general, dams of moderate height, in proportion to the elevation of the banks, will not sensibly increase the elevation of such freshets as surmount these banks; and, consequently, will not occasion any additional injury to marginal property.* This fact is proved by experience, and demonstrable by argument.

It is well known, that, while a river may be deep, both above and below a dam, only a very thin sheet of water flows over it, and that, for every foot rise below the dam, there is but a few inches added to the thickness of this sheet; so that, after a certain rise, which varies with the height of the dam, the water will pass smooth over it. Almost every body has had an opportunity of witnessing this fact: of course it could not be so, if the water above the dam did not rise much less than below. If, then, the freshets, after the erection of a dam, are not swelled higher than before, how can any additional injury be done to marginal property? It is only immediately at the dam that such an effect can take place; there, the water will necessarily flow with greater rapidity, and the banks will be liable to be abraded: this, however, may be easily obviated by either walling up or paving soft banks, to some distance below the abutments.

I have found the opinion, that marginal property does not suffer from the erection of moderate dams below it, well established in all the situations where it has been tested by experience, and particularly on *James river itself*, above each of the two new dams; at *Fore's fish dam* and *Maiden's Adventure.*

Indeed, I have seen many places where the land above dams has been actually benefited by them: this may be accounted for, by the circumstance that, the water, in pouring over a dam, draws the current in an uniform sheet to the middle of the channel, and relieves the low grounds, over which the water becomes more still; and may even leave rich alluvial depositions.

Considering the great importance of this subject, and especially, that heavy damages are commonly claimed on the marginal estates above dams; and many objections made which would not exist, if the principle was more generally admitted, I have been induced to enlarge upon some of the remarks contained in my preceding reports; and, more particularly, in that of July, 1826, since which the objection just discussed has again been brought forward.

While on this subject, I would propose a plan for ascertaining, in the first place, whether any injury is done by a dam; and, in the next, the exact extent of this injury. Before erecting the dam, let an accurate levelling be made of the whole distance to be covered by the pond, and as many bench-marks established as may be deemed necessary. The whole being properly recorded; after the occurrence of a freshet, if application was made for damages; it would be very easy, by reference to any of the marks, to ascertain accurately the rise above low-water-mark, both above and below the dam; and thereby, to determine, whether the height has been increased in consequence of its erection; and if so, how much. I am convinced that such a measure would save much expense and contention for damages.

In the report above adverted to, I have presented a general and comparative enquiry into the advantages and disadvantages of a lock and dam improvement, to which I beg to refer to avoid repetition. I will confine myself here to such remarks only as arise either from new circumstances and objections, or from the operations of the survey.

The chance of finding some dams out of order has been made an objection to the mode of improvement proposed. This was answered in a great measure at page 479, of the former report. The power of the current may easily be estimated, and counteracted by adequate resistance: dams substantially built can be made to resist it. Such dams could only get out of order from decay and neglect. The plan proposed for those made of stone and wood, allows of repairing any part of them with great facility. So that, with careful attention, they could easily be kept sound and in good order. With these dams, upon good foundations, which can be had every where on James river, it is not probable that a breach would ever take place; and still less, that it would be so complete as to interrupt the navigation.

It is quite likely, besides, that hydraulick lime may be obtained in sufficient abundance to build dams upon a still more permanent plan, as suggested in 1826.

The chance of finding some locks out of order, is also objected. This might likewise be urged against canals, on which, such accidents must be attended with more serious inconveniences even than in the bed of a river. On a canal, the failure of a lock, for instance, not only stops boats, but deprives the lower part of the same section of its supply of water. In a dam, the failure of a lock confines the inconvenience to but a short distance. As, however, the possibility of an accident of the kind does not prevent the making of canals, but only advocates the propriety of making these important works very substantial; so it ought in a lock and dam improvement.

The locks in Bosher's and Maiden's Adventure dam stand well: and, if they were built of permanent materials, there is no reason why they should not stand any number of years, as they have stood through the three last. The same thing may be said of the dams themselves.

It is further objected, that "the delay of the tow-boat (which must wait for all the boats it has in tow, to pass one at a time, before it can proceed on its passage) would be a heavy burthen upon the commerce of the river." With due respect, I beg to remark on this subject, that this delay has been made an element of the estimate of the cost of transportation contained in the table, (page 464 of the former report,) and, therefore, cannot stand as an objection against a plan, recommended in consequence of the favorable results of this very estimate.

The objection arising from *the expense of a greater number of lock-keepers*, was also made an element of my calculations, pages 470 and 476;) 10 per cent. having been allowed on this improvement, for interest, repairs, attendance, &c.; whereas, only 8 per cent. was assumed for the same purpose, on the canal improvement, (page 437.) The extra expense produced by this circumstance, besides, is not so considerable as might be supposed. This I will easily demonstrate, by going more into details.

Whenever the distance between two locks does not exceed one mile, one lock keeper, employing a hand, may easily attend to both. Such a case will, of course, be more common on the canal, than on the lock and dam improvement. According to the plans of both locations, there will be, between Maiden's Adventure and Lynchburg:

	Detached Locks.	*Sets of*	
		Two.	*Three.*
On the canal, -	21	12	2
In the river, -	41	6	3

Allowing to a lock-keeper for one lock,	$200 00
To a lock-keeper and hand for two locks,	300 00
To a lock-keeper and two hands for three locks,	400 00

(which are certainly ample prices, but I wish to make a safe calculation;) the account will stand thus:

On the Canal.

21	lock-keepers	at	$200, - - -	$4,200 00
12	do.	at	300, - - -	3,600 00
2	do.	at	400, - - -	800 00
			Total,	$8,600 00

On the River.

41	lock-keepers	at	$200, - - -	$8,200 00
6	do.	at	300, - - -	1,800 00
3	do.	at	400, - - -	1,200 00
				$11,200 00
			Difference,	$2,600 00

which is not ½ per cent. of the estimated cost of the lock and dam improvement. The whole amount for lock-keepers, is 1 2-3 per cent. of the same.

I proceed now to the most important objection that is made to dams; an objection of so much weight that, I hope I shall be excused for discussing it at some length: I have reference *to the influence that ponds may have on the health of all who reside near the river.* In the report of 1826, page 482, I have remarked, that opinions are various on this head; and that, while some expressed great apprehensions, it was even contended by others, that dams would rather have a beneficial effect, by keeping the river at a constant height, and never permitting any of the hasty vegetation, which, in the spring of the year, is activated in shallow water by the early heat of the sun, to be exposed afterwards to rapid decay, when, the water subsiding, the bottom, in numerous places, is left entirely dry, under the powerful influence of a burning sun; which, together with moisture, promotes the decomposition and chemical re-action of the elements of vegetable matter. This circumstance came frequently under my observation during the last survey; and I am inclined to consider it one of the chief causes of sickness on the river. And, indeed, in several instances, the offensive smell arising from the weeds and light sediment, which were left uncovered by the receding water, induced us to remove our station for the night far from such places. No inconvenience of the sort was ever experienced, when our boats stopped in a pond of deep water. That sickness is owing to the decomposition of vegetable matter is, I believe, generally admitted; and the opinion seems to be corroborated by the fact, that it is chiefly experienced where the growth of weeds is luxuriant, and where light mould is deposited. If this be granted, whatever will promote this growth and expose the sediment to the contact of the air, will increase the sickliness of the neighbourhood; and I should, I think, apprehend more from a shoal left dry after weeds have grown, or vegetable mould settled upon it, than from a pond of water raised over it. During the course of the survey, I have made frequent enquiries on this subject; and I have not understood that there was any more sickness near the natural ponds of the river than in other places: why then should artificial ponds be taxed with an injury which is not attributed to natural ones?

I have, on the contrary, understood that *the pond of Bosher's dam* had improved the health of the neighbourhood. This is ascribed to the causes just mentioned, and also to this circumstance: that, in other places, a rise of one or two feet, which may frequently occur in the spring, may leave much noxious sediment in places which are left dry afterwards; whereas, the same flood will not raise a pond more than a few inches, and the sediment will be confined to a narrow streak along the banks, where it will hardly be perceived or noticed.

It is only on small streams that I should apprehend deleterious effects from ponds; because, on these small water-courses, dams are generally raised high; they introduce moisture through the banks, which promotes vegetation in the spring, and then in the summer they sink low, leaving much vegetable matter, and alluvial deposite, along their margin. But, the ponds on James river will always be full, and have a current.

Along the new pond formed lately *above Maiden's Adventure*, however, some families complained of more sickness in 1826, than they had experienced before. But this was not general, and certainly a single fact is not sufficient to establish a general principle; especially on a subject which is known to be attended with much vicissitude.

Unknown and accidental causes may have produced the increase of sickliness that year, in a neighbourhood which has ever been considered unhealthy. This is rendered the more probable, by the circumstance that, as I have been informed, last year, (1827,) the same neighbourhood was healthy. It is moreover to be remarked that, the families which were visited by sickness in 1826, reside near the head of the new pond, where its influence should evidently be least, if it was the cause of disease.

It is a well known fact that, in unhealthy countries, considerable aggravations of sickliness will, from time to time, occur without any assignable cause, and that healthy countries themselves, are occasionally suddenly visited by the most fatal diseases, without any particular circumstance to which they can be traced. The valley above the Blue Ridge is an instance of the kind; and this year a few cases of bilious fevers have made their appearance in the upper part of James river, though there is neither pond, nor any other apparent cause, to which they can be attributed.

In conclusion, I am inclined to the opinion that ponds in James river, not only would not add to the sickliness of any section along it; but would, on the contrary, rather benefit the health of those who live near it: otherwise, it must be supposed that the miasma, which contaminate the atmosphere, arise from the water itself and not from vegetable matter; which I think quite inadmissible. It appears evident to me that, the decomposition of vegetable matter produces the deleterious principle; and that the fogs of the river furnish only the dissolvent and vehicle by which it is wafted through the atmosphere. A mere elastic gas, if lighter than air, would rise at once to a great height; if heavier, it would remain at the surface of the earth: whereas, when combined with vapours, these are checked in their ascent, by their contact with cold air, at a certain elevation where they remain visible and concentrated in the morning, until dissipated by the additional heat imparted to them by the sun. This combination of the miasma with vapours is rendered the more probable by the circumstance, that a frost generally puts an end to sickness, which seems to be effected, by its congealing the vapours of water and thus separating them from the deleterious principle with which they were combined during the prevalence of warm weather.

If I am correct in these conclusions, it must appear evident, that the valley of a small creek may be rendered unhealthy by damming up its water, whereby a greater surface is exposed to evaporation. The fogs are then increased, and with them the power which carries up the miasmata. But near a large stream which always furnishes a great abundance of vapours, I should consider that the water in the mouth of small creeks would be perfectly insignificant; the quantity of vapours arising from the main stream will always be more than sufficient to dissolve and carry up all the miasma in its vicinity. The principal aim along the margin of a large river, should be to obviate the causes which create miasmata, and thereby to render the vapours arising from it harmless: this, I think, ponds kept at an uniform height will effect in a sensible degree.

From the preceding remarks, it will be perceived, that I would not apprehend any injury from the water backed by the dams into the mouths of small creeks or ravines. But, as I might not generally succeed in imparting my own conviction in this matter, and it is desirable that, even groundless apprehensions should be removed on a subject as important as health, it having been suggested that, "dams would throw the water back into every creek and rivulet, which comes into the river, where it would become stagnant, and produce deleterious effects," I attended very particularly to this point during the survey, and I have ascertained that no evil need be apprehended from this cause. The ravines and creeks which open into James river, have generally more fall at their mouth than can be detected by the eye: *They flow into the river as often among falls as below them.* One of the most remarkable instances of the kind below Lynchburg, is *Freeland's creek,* which empties itself through alluvial banks, about the middle of the fall of the same name: *Judith's creek* above Lynchburg, is similarly situated: *Saunders' creek*, *Pedlar creek, Jennings' creek,* and a great many others which empty themselves among falls, might likewise be named: they are exhibited on the maps.

As to the other creeks which flow into natural ponds below falls, it is but seldom, as above stated, that they are so sluggish as to be entered more than a few yards by the ponds raised before their mouths. The most sluggish have been noticed in the estimates at the end of this report: it will be remarked, that the location can be so arranged, that they will generally be at the head of the artificial ponds contemplated by the improvement; where, of course, but an inconsiderable head of water will be raised into them. *Saunders' creek* above Jefferson, *Spring-Garden creek* opposite New-Canton, *Little Bremo* above it, *Totier creek* above Scottsville, *Anderson's creek* below Warminster, *Swann's creek* at Warminster itself, and two or three others whose names are not known, are all the runs which were observed to be sluggish at their mouths.

PLAN OF THE WORKS.

The river can be improved, almost the whole way, by locks and dams. Short canals will be necessary; 1st, at the *Seven Islands.* The canal at this place will be 3 46 miles long, beginning at the mouth of Hardware river, and ending at Big Bremo. The river is so wide in that distance, that dams would be very costly; and would, besides, be particularly objectionable on account of a great number of very low islands which divide the stream, and would not allow of dams being raised to a proper height to improve the navigation.

2d. A canal through *the Blue Ridge,* would be indispensable: it has been made: but its dimensions were not calculated for steam navigation; only very small steam-boats could pass through it. It is probable, that it would be found better to stop with one tow-boat at the lower end of this canal, and start from its head with a new one.

3d. Another canal will be advisable at the gap of the Richpatch mountain. Col. J. Jordan was making a canal at that place when it was surveyed: how far it might answer the purpose, I could not positively determine, as it was then only in an incipient state: I have, therefore, estimated the improvement, as if this work did not exist.*

---

* It will also be advisable to make a tunnel 167 yards long, through a narrow neck just below Ritchie's land, by which a distance of 3 miles will be saved, and a very valuable water power and seat for its application obtained.

In many other places, where the fall is great, short canals might answer the purpose as well as dams, but would generally be more expensive: they might, however, be made expedient by applications for water power; the petitioners paying water rent, or making a stipulated part of the canal themselves: The cost of the work would be alleviated by such contracts. But, as I do not wish to lessen the estimate by any speculation resting on an uncertain basis, I mention this circumstance here, merely as a subject of future consideration, to be introduced at the time of executing the work.

The mode of construction of the works, must depend, in a great measure, on the materials that can be obtained; and, on this account, I had formerly found much difficulty to make up an opinion, as to the plan best to be adopted for locks; permanency, on one hand, recommending a free use of hydraulick cement; while, on the other, economy remonstrated against it. The great cost of this important material, would have probably induced the adoption of a less durable plan; especially, as the advantage gained by its use, would have been more than counterbalanced by the circumstance, that it must be imported into the State. The alternative, either to adopt an imperfect mode of improvement, or to purchase perfection by making Virginia a tributary of other States to a large amount, was embarrassing.

Every doubt and difficulty on this subject has been now removed, by the fortunate discovery of hydraulick lime in Virginia. The State is indebted for this important service to Mr. John H. Cocke, jr. who, impressed with the value of this material in public works, and with a desire of benefiting his native State, devoted great part of last summer to a persevering search, which entitles him to the thanks of every friend of internal improvement, and has conferred upon the State a considerable benefit. Instead of sending capital out of it for this object, Virginia has now acquired an additional article of trade: in the construction of public works, the saving will be immense. I am convinced that, in consequence of this discovery, a lock and dam improvement of James river, would be made for from 3 to $400,000 cheaper: and a canal up to Covington, for, probably, $500,000 less, than if the New York, instead of Virginia hydraulick lime, was used.

This lime was discovered near *James river*, at the nearest point of the lime-stone district, and within a short distance of the *Blue Ridge canal*. Every information relative to this subject, will be found in the following letter, which Mr. Cocke addressed to me:

"BREMO, October 10th, 1827.

"SIR,—Whilst engaged lately in New York, in the study and practice of my profession, I endeavoured to make myself acquainted, as far as possible, with the various water-limes found there. Wherever a public work, requiring lime for hydraulick purposes, has passed through a lime-stone district, in that State, water-lime has been discovered almost universally. I had no doubt, therefore, but that it existed in our mountains, and I have been impatient since my return, to make the search.

"After leaving you in Montgomery last month, I stopped with that view near the junction of the North and South branches of James river, where I had some reason to believe it could be found. You may recollect that specimens of a stone, supposed to be water-lime, were brought for Judge Wright's examination, when we were together in the fall of '24, and that he thought them so much like varieties of water-lime which he had seen, that he advised experiments should be made. That stone was found on a farm belonging to Mr. Jordan, one of the contractors on the Blue Ridge canal. The experiments were made, I believe, but, either not proving satisfactory, or the discovery of water lime being regarded as of little consequence, no farther notice was taken of the matter. When I began lately to make enquiries about that stone, I was told that a Mr. Edmundson did make experiments in '24, soon after we left the place, with a stone that answered the description of water lime; found that it set well under water, and brought the sets and shewed them, after they had become hard, to various persons engaged on the canal. I went immediately to see this quarry, and found on experiment, that it was very good water lime. It is immediately on the bank of the North branch of James river, about seven miles above the western end of the Blue Ridge canal: it resembles some of the water-limes of New York very much, is of a light grey colour, and occurs in great abundance. I am confident that this is good water-lime: but, that you may be satisfied by personal observation, I will send you a keg of the same, burnt and ground, as soon as I receive a barrel which I had forwarded before I left the quarry. It ought to have arrived ere this, and I had intended to have sent it with this letter. It cannot be more than a few days longer before it reaches me. Another variety of lime of which you will find a small quantity in the keg, is burnt from a dark blue slaty lime-stone, found on the land of Mr. Bagg, in the same neighbourhood. This very much resembles a lime-stone found in Pennsylvania, and used for hy-

draulick works on the Union canal. I have little doubt but that this also is good water-lime. But, my experiments were not so satisfactory as in the other case: you can try it, however: it burns more easily than the grey above mentioned. This last you may try unmixed, or with any proportion of sand less than one to one: with more sand than that, it crumbles when put immediately into water. It occurred to me, that the reason why the experiments made in '24, were not successful, was, that the stone was probably burnt in a smith's forge, and, of course, too quickly. I found that when the stone was burnt in that way, it would not set.

"You probably heard the result of experiments made at Col. Preston's, from that gentleman.

"I communicate these facts to you with the more readiness, as I see in one of your reports that your ideas of the importance of using this article more freely than is usual in hydraulick works, are in accordance with my own; but more especially as your official station will enable you to make them known and appreciated.

"Your's, &c.

"JOHN H. COCKE, Jr."

"To C. CROZET, Esq."

I have repeated the experiments made by Mr. Cocke, and have deposited in your office specimens both of the original and of the burnt stone, as well as sets made by myself and Mr. C.

All the samples of the best kind are marked No. 1; the others, No. 2. The results I obtained on both are a little different from his: my sets are pure lime, they are harder than his, having been longer under water. The lime represented by Mr. Cocke as inferior, set slower than the other, and after a week was yet soft, but at the end of a month it became harder than the first, and is still so now: this difference in our results induced me to examine more particularly the stone. I found that it is not uniform, and concluded that most probably we had made trial of different samples. Some parts of this dark stone, after being burnt, slack slowly in the air and crumble, while others remain hard; it is very probable that my experiment was made with one of the best pieces. Upon the whole, I am convinced that its average quality will prove as good as the other; but that it will only require more time to harden.

These experiments are conclusive, but not complete: when these limes are brought into use, it will be necessary to try with them different qualities and proportions of sand; and to vary the manner and time of working it into mortar, so as to obtain the best results.

In regard to the experiments made at Col. Preston's, mentioned in the latter part of the above letter, I have understood from that gentleman that they had not been successful. They were made on a stone found in Montgomery county, on the top of the Alleghany mountain, near the place where it has been ascertained that a connexion of the Roanoke and New river could be made. I found myself in that same neighbourhood a stone which I burnt in a common coal grate; after having ground it, I tried it under water and it became hard in one or two hours: like the others, it has been nearly three months immersed in water, and is the hardest of the sets; it is marked No. 3. The existence of hydraulick lime in that neighbourhood is also a very important circumstance.

In consequence of the discovery of hydraulick lime at the Blue Ridge, I have estimated the locks and abutments of dams as laid in this material: the price of the lime at each place will be compounded of its cost at the kiln and of the expense of transporting it. Considering that a general contract would be made for this article, I have averaged its price between the Blue Ridge and Maiden's Adventure: from a calculation of all the elements which will influence its cost, I think that it will probably be obtained within that distance, at an average of 45 cents a bushel in powder.

From the Blue Ridge to Covington, though the distance is less, the price of the same lime would probably be greater, owing to the difficulty of transporting it. The water transportation will be ascending, the load small, and the navigation even sometimes impracticable above Pattonsburg; so that, land carriage must frequently be resorted to. As, however, the difference would not be very great, in order to allow for the almost certain circumstance, that water lime will also be found along the upper part of James river, which flows among ranges of lime-stone cliffs, I have assumed the same price of 45 cents a bushel for this upper section.

The locks are calculated to be 15 feet wide, and 85 feet long from gate to gate. Longer boats than can pass through these locks would not be so manageable, and besides could not pass through the locks of the lower canal.

Considering that cut stone is very expensive and merely ornamental, and that it is rather an injury to the walls of locks than an advantage, unless great care be taken to bind firmly the facing to the backing, by substantial and frequent headers, which is seldom properly attended to, I think it preferable to make walls of uniform masonry: I have, therefore, made my estimates for common masonry, faced only with split stones except at the quoins, which must necessarily be cut stone.

It will be remarked, that locks in dams are estimated at less than in canals; for this difference, there are several concurring causes.

1st. A good rock foundation can be obtained every where, and consequently a floor or inverted arch is unnecessary.

2d. The expense of excavating lock-pits is saved, and where some excavation of rock is necessary to deepen the foundation at ledges, it is fully compensated by the advantage of resting the lock walls on the ledge at each side of the trench cut through it, by which some of their height is saved.

3d. There is no necessity for wing-walls, puddling, and sheet piling.

4th. Great part of the walls need not be so thick as in a canal, not having the same pressure to bear: The outlet and inlet walls bear none at all, there being the same height of water within and without.

The greatest pressure the lock-walls have to bear is at low water; it diminishes as the water rises.

5th. The buttresses at the breast wall, as well as the width of the lock, occupy a certain portion of the dam, the expense of which is saved.

In many cases, and especially in the lower section, coffer-dams will be necessary to establish the foundations of locks, but hardly ever in a depth exceeding three feet, and more frequently under it: in the upper part of the river, they will seldom be wanted.

Wherever the depth is not sufficent at a lock-site, it must be given according to localities, either by raising the dam below to a proper height; or, by excavating the rock, or by both means combined. The excavation of the ledge for a short distance will generally be found the cheapest plan, as it will save the expense of raising the preceding dam, and also some of the height of the lock-walls whenever the ledge shall be found solid enough to rest them on the edge of the cut

The locks, according to local circumstances, must be either in the pond above the dam, or below it. In the former situation, some rock excavation will generally be requisite; in the latter, a pier-head of dry masonry must be extended upwards for a distance of about one hundred feet, in order to render the approach of locks perfectly safe.

The lock-walls are calculated to be raised 3 feet above the level of low-water over the dam. In a freshet which would reach this elevation above the dam, it is probable that the navigation would be interrupted: the height of a freshet will vary with the fall and width of the river; but, upon an average, it will not be far from the truth to consider, that a flood which would raise a pond 3 feet over a dam, would be about 9 feet high below it. I have observed such a freshet near *Rock-Castle;* its velocity was five miles an hour, and much drift timber floated on the surface of the stream. Such freshets are not very frequent and are of very short duration.

Suitable culverts should be provided near the upper gates of each lock to draw off the sediment, which might otherwise accumulate before them in freshets.

The dams, if hydraulick lime can be procured in abundance, could be made upon the plan mentioned in my report of 1826; but, as this would require an immense quantity of lime, it is doubtful whether a great demand would not enhance the price of it so as to considerably swell the cost of the work. Dams upon the plan alluded to would certainly be cheaper, than those made of timber in the usual way; provided, hydraulick lime should be found in a sufficient number of places to create a competition among the venders of this article: an extensive search for this material, would therefore be an important preliminary step to be taken before contracting for the works.

Unwilling to introduce in my estimates uncertain data, having a tendency to lessen the estimated cost of the work, although I am inclined to think that hydraulick lime will be discovered in great abundance, I have preferred to err on the safe side, by calculating the cost of dams made of timber and stone.

That dams are more expensive in proportion as the quantity of timber used in them is greater, will readily appear upon consideration of the two following concurring causes:

In the first place, timber being buoyant and stone about four times heavier, it is evident that wherever stone can take the place of timber, the thickness of dams may be reduced, and economy produced.

In the next place, where timber and stone occupy the same space, the former is so much more expensive than the latter, that for a cubic yard of timber in place, a cubic yard of the best masonry laid in mortar could be had.

Hence these two causes combined, viz: the diminution of thickness of dams and the difference of cost of the materials, recommend in building dams to adopt such a plan as will make the ratio of timber to stone in the work as great as possible. Timber should chiefly be used to make dams water-tight, stone to give it stability.

On these accounts, the plan which appears to me preferable for dams of timber and stone, is a frame composed of sills, uprights and caps, planked over on the upper side of the dam and supported firmly by a wall of dry masonry built inside; such dams are usual on many rivers, and especially on the Rivanna: it is evident that the frames need not be made of heavy timbers; their object being merely to bind the masonry and receive the planking.

This species of dams is preferred to those made on the plan hitherto used on James river, and consisting of a crib of timber filled in with stones; for the followng reasons:

1. In crib dams there are two thick breasts of timber connected by numerous ties; this quantity of wood is costly and requires that the dams should have a broad base; hence, as above remarked, they are more expensive.

2. The stones inside, although they give steadiness to the dam, being promiscuously thrown in, have an outward pressure, which, when the dove-tails of the ties begin to decay, accelerates the fall of the timber; whereas, in framed dams, the wall supports the frame, and is protected by it.

3. It is impossible to repair crib dams upon the same plan, without removing the stones inside; whereas, framed dams may be so combined that any piece of them may re-placed without removing others; so, that no breach can be apprehended, if careful attention be given to their repairs.

4. The strength of crib dams depends chiefly on their breast of timber, which, upon the usual construction, is apt to decay rapidly; for, the sheet of water passing over a dam does not descend along its face, but projects forward in a parabolic curve distant from the timber. The distance increases with the head of water above the dam, and is frequently over a foot; hence, air has a free access to the breast of such a dam, which is, therefore, in the very worst situation for the preservation of timber; that is, constantly exposed to the contact of a moist atmosphere.

In conclusion, crib dams are more expensive; and, neither so durable, nor so easily repaired as framed ones; which, if carefully built and attended to, will not be liable to accidents; and could always receive repairs without inconvenience to the navigation.

The abutments of the dams are estimated as laid in hydraulick lime; and soft banks, where the current bears against them, must be paved for some distance below the abutments.

In estimating the height of each dam, some allowance should be made for the swell of the water over it, and the fall in the pond raised by it. In a river whose bottom is so uneven, and width so variable, as James river, no correct calculations could be made on this subject: I have, therefore, had recourse to actual measurement.

The swell over the dam at Maiden's Adventure,
at low water, was found to be 0.30 feet.
And the fall in the pond to average per mile, 0.18
The water is deep and the river wide.
At the Blue Ridge, the swell was found to be
over the dam, 0.37
And the fall in the pond to average 0.48 per mile.

Many natural ponds were also observed; and their fall found to range, according to their depth and width, between 0.25 and 0.50 feet per mile.*

Considering, however, that none of these ponds was measured when the water was at its lowest, except the pond at Maiden's Adventure, I have assumed nearly the minimum given by it; and allowed at each dam, for the swell 0.30
and for the fall per mile in the pond, 0.20
These deductions from the heights of the dams, amount to about 80 feet in the whole distance up to Covington.

In the execution of the work, it would, I think, be found advantageous to employ contractors only for the purpose of furnishing the requisite materials; and in their stead to appoint an adequate number of competent agents to superintend the works; which, in this way, would, I am convinced, be better executed, and at less expense; for, the State would retain the profits usually made by contractors; and the superintendents would find it to their interest to bestow all their skill and attention to the works under their care. I would recommend the adoption of this mode of proceeding as far as practicable. In support of this opinion, I have extracted the following statement from the able report of the Commissioner of the Kanawha Road and Navigation. After having spoken of the defective work done by Messrs. Browns, at the Blue Ridge Canal, he adds: "When the defect in this work was discovered, I communicated with the President and Directors of the James River Company, as to the best and most economical way for making repairs; and they concurred with me in the opinion, *that it would be best to employ the hands then on the canal, in part, hire some additional labourers by the day or month, and employ a suitable number of stone-cutters and lock-builders to carry on the work.* This was accordingly done: good stone, in sufficient quantity, was procured to re-place all that was defective; lime and Roman cement was obtained, and the lock taken down and re-built. * * * * *Had this work been put out by contract, it would have cost at least double that sum.*"

---

* On our return in August, the water being low, the fall of the canal from the old arch to the basin was measured and found to be 1,50 feet; the distance being 5 miles and 4 chains.

ESTIMATE OF THE COST OF THE IMPROVEMENT.

Having, in obedience to the resolution of the General Assembly of the 9th March, 1827, made my estimates with much care and detail, I could not complete the whole in time to be laid before you. I have thought, therefore, that it would be better to submit to you at present, the estimate up to Lynchburg, which might, in a great measure, answer the purpose of this report; and give a pretty correct idea of the probable cost of the whole improvement as far as Covington. The distance up to Lynchburg is, besides, particularly interesting, because it affords data upon which speculations may be predicated, and the results of the improvement anticipated, with mathematical precision and certainty.

The estimate I have made up to Lynchburg, amounts to $664,140
Which is $115,860 less than the rough estimate I made in 1826.
The distance from Maiden's Adventure to Lynchburg being 121 miles,
And the fall, *359 feet,
The cost of the improvement is at the rate of $5,490 per mile,
And $1,850 per ft. lift;

Upon which it is proper to observe, that of this estimate $120,000 is allotted for the short canal round the Seven Islands falls, where the ground is very unfavourable.

---

* In the statement made in 1826, a mistake in transcribing was made in regard to the fall of the river, which is 359, instead of 396 feet. The average of 3 feet per mile, stated in page 467, was correct; so, that the calculations relative to transportation are not affected.

CONSIDERATIONS ON THE RESULTS OF THE IMPROVEMENT.

The calculations in 1826, in regard to the capacity of the trade to re-pay the expense of the improvement, were predicated upon the fact that the trade of James river had averaged, within a few years, 34,224 tons of produce and merchandize, exclusive of coal and plaister; one half of which supposed to be to and from Lynchburg.

The number of tons transported in 1826, was less than this average; but it must be recollected, that the tobacco brought down that year was made in 1825, when the quantity raised was less than usual; and that, in 1826, the crops failed on James river. Both causes united made that year one of the most unfavorable to the trade that has occurred for some time past.

During the last year, (1827,) there has been a considerable increase of the trade, which, it is quite probable, will not be less in any succeeding year, for several reasons: In the first place, extensive iron works have lately been established, which have already added to the quantity of this article brought down James river, and will do more hereafter; in the next, the road from Staunton to Scottsville has been completed, but too late to have any influence on the trade of last year: its effect will probably be perceived in the receipts of this year, (1828.) It is, besides, reasonable to admit, that, even without any improvement of the navigation, the quantity of produce along James river must increase: so that the trade of last year may be safely assumed as certain.

This admitted, without engaging in any distant speculations, I will demonstrate that the existing trade is sufficient to pay a fair dividend on the improvement.

There were transported last year on James river, 40,800 tons of produce and merchandize, besides 529,343 bushels of coal that passed down the canal.

The ratio of the ascending and descending trades was, as before, 1 to 4: it may not be amiss to remark, that the ratio of the receipts of the ascending and descending trade was less than that of their weights; being only 1 to 6.

With these data, speculations relative to the effect of the improvement, from Richmond to Lynchburg, are both simple and certain.

The improvement has been estimated at $664,140, viz:

for a canal, at the Seven Islands,	$120,370
for locks and dams,	543,770

The former should produce for interest, repairs and superintendence, 8 per cent., or	$ 9,630
The latter should yield 10 per cent., or	54,380
Total amount,	$64,010

It is evident, that very light tolls on 40,800 tons would obtain this sum on the new improvement.

But, as the unproductiveness of the canal is, in a great measure, owing to the difficulties of the navigation above, the improvement of this should be made to relieve the canal, and both improvements should be blended together, in the consideration of the revenue to be obtained from the trade of the river.

The canal has cost,		$640,000
It should produce 8 per cent., or		51,200
It has just been said that the new improvement should yield		64,010
Total amount to be raised on the trade from Lynchburg to Richmond,		115,210
The canal produces, for water and ground rent,	3,740	
For tolls on coal, (not included in the 40,800 tons,)	5,290	
		9,030
Leaving to be obtained from the trade of the river, exclusive of coal,		$ 106,180

It can easily be proved, that tolls at an average rate of $ 4 per ton, from Lynchburg to Richmond, would more than effect this object.

Considering, as heretofore, that one half of the trade is from and to Lynchburg, the account would be as follows:

20,400 tons, for the whole distance, at $ 4,	$ 81,600
20,400 tons, at an average of half the distance, half tolls, $ 2,	40,800
Total amount of tolls,	$ 122,400
From which deducting the above sum,	$ 106,180
There will be a surplus revenue of	$ 16,220

after having paid dividend, repairs, &c. on the improvement.

There remains now to shew, that the transportation on the river can bear these tolls.

In page 469, of the report of 1826, it has been computed, that the difference between the present cost of transportation, and that by steam-power, on the improved river, would be, in a trip from Lynchburg to Richmond, and back,

per ton,	$7 42
from which, deducting for tolls,	4 00
there will be a reduction of freight of	$3 42*

besides the advantages of regularity of trade, convenience, safety, despatch and security of property.

These advantages alone, if no other was obtained, would strongly recommend the improvement. The importance of *regularity, convenience and despatch* in trade is generally understood.

As to *the security of property*, it is a subject particularly deserving of attention on James river. Not only property in the boats, but also on shore, suffers in consequence of the present state of the navigation. Better boats would preserve cargoes from being damaged; and navigation on a larger scale would be conducted by respectable and responsible men, whose character would protect both cargoes and marginal property.

In regard to *safety*, I mentioned at the beginning of this report, that, towards the end of May and beginning of June, we were obstinately interrupted by successive rises of the river. These unexpected freshets, at a time when much tobacco is taken down, have been fatal to many heavy loads: we saw a

---

* These calculations suppose the agency of steam as a propelling power; the certainty of its being introduced has been fully discussed in my former report. It may not be amiss, however, to shew that, until it is introduced, (which I myself think will be immediately,) the tolls proposed may be paid, even by common boats.

If a still water navigation be procured, boats can always bring full loads down:

but, to overrate nothing, say that they descend with only	8 tons,
And return with the usual ratio of 1-4, or	2 tons,
In all, going and returning,	10 tons.

The distance between Lynchburg and Richmond, being 150 miles, they can perform a trip in an average of 15 days.

15 days, at $ 2 50 for boat and 3 hands, is		$37 50
For 10 tons transported, or per ton,		3 75
The present price from and to Lynchburg, averaging, as stated in the report of 1826,		9 10
The difference in the cost of transportation, in favor of the improvement, is	5 35	
From which, deducting for tolls,	4 00	
there will be left in favor of the trade,		$1 35

per ton of produce and merchandize, on an average. If better boats were used, this reduction would still be greater; consequently, even after the introduction of steam, individuals who may choose to send their own boat and hands down, without going in tow of the propelling boat, will do it at less expense than now, in consequence of the improvement.

number of boats wrecked within a few days. The valuable loads, thus lost, advocate more urgently than words, the necessity of some improvement to secure the James river trade inst such heavy losses: and here it may be proper to add, these accidents happen chiefly during low freshets; which are, of course, the most common. Then the water is not high enough for the boats to pass over rocks and the sides of sluices, against which they are frequently borne by the uncontrollable power of the current, which at that stage, as I have said before, takes frequently a new direction; and, at the falls, is then generally stronger than when either higher or lower. Places are very numerous where the least error or miss produces inevitable destruction of the boat.

Without speaking of the loss of lives which sometimes accompanies that of the cargo, it is obvious that 10 hogsheads of acco lost, amounting perhaps to $ 1500, would pay tolls on like number of hogsheads for a great many years.

The execution of the improvement will, therefore, confer mediately a great benefit upon the existing trade: it will use a diminution of from $ 1 50 to $ 3 50 per ton from hburg to Richmond, and in proportion for other distances een them, with a prospect of a still greater reduction, the trade shall have so increased as to authorise a dimion of the rate of tolls. For, no doubt can exist, but that the trade must increase in consequence of the improvement: besides the impulse which it will receive, it is evident that many bulky articles, which, beyond a certain distance, cannot bear transportation, will then be brought to market. Lime, for instance, which abounds over the Blue Ridge, will no longer be imported from other States: coal will be carried up the river, &c.

At the same time that the commerce will be benefited, the State will derive from this source a revenue, that will not only pay a reasonable dividend on the new improvement, but also relieve the lower canal from the yearly deficiency in the receipts. The certainty of obtaining this revenue cannot admit of a doubt.

In the first place, as regards the source from which it is to be derived, no future and gratuitous speculation has been introduced here; the computation rests upon a safe basis, that of the actually existing trade.

In the next, as to the cost of the improvement, wherever there was any uncertainty as to the data, I have invariably adopted the safest; and it is more probable, that if well conducted, it will be under than above the estimate.

As to the expense of steam-power, by recurring to pages 454 and 470, of my former report, it will be admitted that it is liberally established. The only point which might not be so easily ascertained, is the cost of a steam-boat of ten horse power. I have stated it at $3,500: This price was founded on correct and careful information: I have obtained since, farther confirmation of the same. I hereto annex for your perusal two letters on this subject.

The first is from Mr. D. I. Burr of Richmond, from which it will appear that he would build engines for a price which would not raise the cost of the whole steam-boat to $3,000.

The second is from Mr. Wm. Kemble of New York, which agrees with my own statement in regard to the price of a steam-boat of ten horse power. It will appear from it, however, that I had somewhat underrated the quantity of coal necessary for the engine, not having supposed that there was so considerable a difference between the English and the Virginia coal. The difference, however, would not be more than 60 cents for the performance of a day: On the other hand, it will be perceived that the other items, and particularly wear and tear, were largely allowed for.

The advantages of an immediate execution of the improvement of the James river are, I hope, so striking as to recommend that such positive benefits should not be farther postponed.

Other considerations urge perhaps still more earnestly its completion: of the annual interest to be paid on the debt contracted for the improvement, so far as it has progressed, there remains to be paid by the fund for internal improvement every year a sum which varies with the receipts; and which, until this year, has generally exceeded $50,000.

This yearly loss would amount, with the accumulation of interest, to very nearly one million of dollars in thirteen years.

Nothing can avert this loss, but the extension of the improvement: what has been done must necessarily be unproductive so long as the navigation shall remain in its present state; whereas, it is probable that the improvement will ultimately be able to pay off the debt: *in the mean time, the attempt is perfectly safe; since the trade will be benefited, and the present revenue certainly increased.* These advantages are within the grasp of the State; and, by the proposed undertaking, profit may immediately be substituted to loss.

This e demonstrated by the following estimate, pretin ge eral view of *the annual revenue and expenses* he or improvement, after the completion of that now o and including interest on the loans obtained, and to btained, for that purpose.

erest on $1,230,000 loans al- ned,		$71,673 50	
664,140, to be obtained fo improvement from Maid dventure to Lynchburg,		39,848 40	111,521 90
Dividends on 700 shares of original stock,			16,800 00
Expenses of the several works for agents, repairs, &c. viz:			
On the lower canal, $640,000, at 2 per cent.		12,800 00	
On the mountain section, 365,000, at 2 per cent.		7,300 00	
On the Kanawha road, 165,000, at 1½ per cent.		2,475 00	
On the Kanawha river, 90,000, at 2 per cent.		1,800 00	
On the contemplated improvement from Maiden's Adventure dam to Lynchburg, viz:			
Canal, $120,370, at 2 per cent.	2,407 40		
Lock and dam, $543,770, at 4 per cent.	21,750 80	24,158 20	
al estimate of charges and repairs,			48,533 20
			$176,855 10
Revenue, viz:			
Estimated tolls from Lynchburg to Richmond after the completion of the improvement:			
On 40,800 tons as above,		122,400 00	
On coal,		5,290 00	
Water and ground rent on lower canal,		3,740 00	
		131,430 00	

Amount expenses brought forward,		$176,855 10
Amount revenue brought forward,	$131,430 00	
Tolls at the Blue Ridge Canal, estimated by the receipts of 1827,	2,400 00	
Tolls on the Kanawha road, do.	4,000 00	
Tolls on the Kanawha river, estimated,	15,000 00	
		152,830 00
Which, of the former deficiency of $50,000, chargeable on the Fund for Internal Improvement, will leave to be provided for, only		$24,025 10

Thus relieving the Fund by an annual sum of $26,000.

The increase of trade will certainly soon make good the remaining deficiency of $24,000: in the mean time, the rate of tolls on the present trade of 40,800 tons, from and to Lynchburg, instead of $4 per ton, might safely be made 4⅗, which the trade could easily bear, as demonstrated in pp. 254–5, and in the note thereon. These tolls will be found much lighter, in proportion, than the present rate on the canal.

As to the means for effecting the improvement, they can easily be devised when the benefits are so certain and the investment so profitable.

In connexion with the improvement of James river, I think that the time has arrived when serious attention should be given to the descent from the Basin to the Dock. The necessity of transferring the cargoes of boats upon drays to be transported down to the shipping, is a burden upon the trade, which will prove much greater after the introduction of larger boats; because then, as it will take but the same time for a boat loaded with twenty tons, as for one loaded with only four, to pass the locks, it is evident that, when such large boats shall be used, in consequence of the improvement, the economy and inducement for going down to the Dock, would be increased in the ratio of at least 20 to 4, or 5 to 1: The saving for each boat will then be from 3 to 4½ dollars.

The set of wooden locks between the Basin and Dock are now so far decayed, as to be beyond the possibility of repair to answer any good purpose: and, indeed, there is now even danger that they may occasion a breach in the Basin; the consequences of which to the public, to the canal and to the Dock, would be greater by far than the cost of re-building them upon a substantial and permanent plan. Some measure should, I think, be immediately taken to avert so serious an occurrence.

The plan I would recommend would be, to close by an embankment the channel leading to these locks, and to begin at once the construction of new ones. They would probably cost $ 100,000 including basins between them.

The surplus of revenue, which is expected to arise from the general improvement, will cover 8 per cent. on this work, (which must be considered as part of the whole line,) and leave yet a yearly balance of $ 18,000, applicable to the payment of the $ 50,000.

But, without having recourse to the assistance of the rest of the line of improvement, I think that the remarkable increase of the business done at the Dock, in which, besides, the State is largely interested, promises a sufficient remuneration for this expenditure, especially, if the coal trade could be drawn into this channel, on which subject I shall shortly lay before you a special report.

I have, so far, spoken only of the distance from Richmond to Lynchburg, and presented results relative thereto, as certain as numbers. In regard to the section from Lynchburg to Covington, the estimates which I have already made convince me that the cost of the improvement contemplated will not differ much from the following:

From Lynchburg to the Blue Ridge canal, 104 feet fall, at $ 1,400 per foot lift,	$ 145,600
From the canal to Covington, 524 feet,* at $ 1,100,	576,400
Total amount,	$ 722,000

The detailed estimates will soon be laid before you.

On the sum here stated, there should be obtained 10 per cent. or $ 72,200

Considering the difficulties of the navigation in the upper part of the river, I think, that the whole of this distance could bear an average of tolls at the rate of $ 4 per ton, which would require a trade equivalent to 18,050 tons, to produce $ 72,200 per annum.† From the amount of tolls paid last year at the Blue Ridge canal, it appears that the trade of this section is at present equivalent to 4,000 tons: so that 7,000 tons are the increase to be produced by the impulse given to that section by the improvement; since, each ton would produce $4 above Lynchburg, and $4 below it, in all $8: so that the account would be:

---

* The fall is only 521 feet; but the water should be raised about 3 feet to form a good pond opposite Covington.

† I do not include in this the Blue Ridge canal, because its cost being part of the debt, the yearly interest of that is comprised in the $ 50,000 above mentioned, which I have shewn would probably be balanced below.

4,000 tons now existing, at $4,		$16,000
Increase of 7,000 do. producing	above Lynchburg,	28,000
	below ditto,	28,000
Total amount,		$72,000

I think, that it is beyond a doubt, that the increase of trade would greatly exceed these 7,000 tons, when it is considered that the communication with the Kanawha would then be opened, and that *the country connected with this part of the improvement, has now neither road nor navigation:* for, in the present state of the river, great part of the produce that could be raised would not bear the expense of transportation to market. It is very obvious, that the trade cannot anticipate the facilities of transportation; but, let these facilities be furnished, and the trade will soon be created. Many extensive and fertile valleys have their outlet upon this section of the river, but are now almost entirely debarred from all commerce, by impassable mountains in one direction, and the want of navigation in the other. Let this be given to them, and they will produce an ample return for the benefit.

In the preceding considerations, I have confined myself to the trade of James river alone; and I have, I think, demonstrated, that the proposed improvement could be safely undertaken: But, the views opened by this subject, do not stop there. Allow me, now, to survey the wide political and commercial field opened to the State.

No where has the kind hand of Providence been more profusely bountiful than in Virginia; blessed with a mild climate and a fertile soil; producing cotton and the best tobacco, besides the common staples of the northern States, to which she even exports her flour; abounding with rich mines; her coal nearer to tide water than that of any other State. Virginia is no less favored in her geographical position: she occupies in the Union an important central situation, and the mouth of the Chesapeake, her fine harbour, always open, strongly protected against aggression, is equal to even that of New York.

She possesses, besides, perhaps more than any other State, the elements of manufactures; she has in abundance, water power, coal, iron and raw materials.

With these immense resources, Virginia may ask, why she is not the most flourishing State in the Union? Why she does not occupy the commercial station for which nature designed her? Circumstances purely accidental and temporary, can alone have produced this state of things.

Probably one of them may be the range of mountains which divide her territory, and have hitherto fixed the limits of her trade. New-York, through a more level country, and by means of the lakes, established at an early date, a commercial intercourse with the west. Lately, by her stupendous canal, she has completely turned this great barrier to the north. The result of this magnificent enterprise is well known: in a few years, her already considerable prosperity has advanced with gigantic strides.

By means of the improvements progressing in the State of Ohio, she stretches her arm through that State to the very door of Virginia; and competes now with New-Orleans for the western trade.

Should the mountainous barrier which divides Virginia be forced through, would the trade take either of these circuitous routes? Certainly not. The local advantages of New-York gave her an early preponderance, and a wealth which has enabled her to extend her influence beyond the natural limits of her commercial sphere. This overgrown influence must cease as soon as a direct communication shall have been opened between the Ohio and Chesapeake; especially when it is considered, that this communication would be but little interrupted by ice.

The importance of a more immediate connexion of the east and west appears to be so generally appreciated, that it is needless to say much on this subject: public opinion, of late years, has manifested itself very conclusively by the operations and enquiries which have been instituted, with a view to the Union of the Ohio to the Chesapeake by a canal; and likewise, by the active efforts of Baltimore to effect the same object by a rail-way.

These exertions must awaken the attention of Virginia. The most direct line from the Ohio to the mouth of the Chesapeake, is evidently through her territory, and it was only, I think, the widely circulated report, that a water communication through the State was impracticable, which could have induced public opinion to foster exclusively the connexion emphatically called the Ohio and Chesapeake canal.

In my report of 1826, page 442, together with other remarks on the superior advantages of a connexion through Virginia, if found practicable, I suggested the importance and probable success of a more careful examination of the mountains, which divide the eastern and western waters: the search has since been made, and a connexion found to be practicable between James river and the Kanawha, and also between New river and the Roanoke. This latter, especially, offers facilities that have not been found any where else: the Roanoke can also be connected with James river, through Botetourt county.

Whether, by canal or rail-way, therefore, a connexion through Virginia is proved to be more practicable than by any other routes As to the canal, a comparative statement of the facts relative to the different routes hitherto discovered, will be found in my report of this year, on the connexion of Roanoke and New river, which is the next I shall present to you.

In regard to the rail-road, by looking at the Map of Virginia, it will appear obvious that a line from Baltimore to the Ohio, will cross at right angles the cluster of formidable ridges which divides the Potomac from the Ohio, and encounter so many steep mountains and deep vallies, that the road must, either be immensely expensive, or very circuitous.

Whereas, from the head of the valley of James river, or of Roanoke, there is only one ridge to be passed over; after which, the valley of New river may be pursued down to the Ohio. The superiority of this route is so obvious, that it has even been proposed to carry the rail-road from Baltimore by way of Covington to the Ohio.

But why should the produce, after having overcome the Alleghany mountain, seek a seaport out of Virginia, when her own harbour is so far superior to others? What more eligible site for the emporium of the central trade, can there be, than the very bay where vessels would retire for protection, and a fleet be stationed for the defence of the Chesapeake?

The New-York canal has placed that city in her present flourishing situation. Baltimore, with the early advantage of a good turnpike, has also acquired a considerable importance. "A hamlet in 1752," says a late publication, "it had in 1820, acquired a population of nearly 63,000 souls, and possessed most of the conveniences and embellishments which belong to cities of the second class. * * * * * * Its population, although no recent census has been taken, may be safely assumed at 72,000."

Why should not a connexion of the eastern and western waters have a similar effect in Virginia? The trade of the west is the common aim of the Atlantic States; it is a prize worthy to be contended for. The success of New-York, and the exertions made by other States to secure it, attest its value. Virginia has only to enter the lists, and the prize is hers. No where does the connexion present itself under more encouraging prospects. It is not the revenue arising from tolls on the improvement, which should occupy the foreground in the view taken of this enterprize; but the immense benefit, the rapid increase of wealth, the political importance, which would accrue to the State from this great undertaking. New-York is largely rewarded for her enterprize: while admiring her wonderful growth and prosperity, the revenue of her canal is forgotten.

I do not think that I am too sanguine in asserting that, by this great improvement, Virginia would become, in regard to the middle States, what New-York is to the northern countries.

Let the barrier which hitherto has confined her commerce to the eastern declivity of her territory, be removed, and the trade of great part of Ohio and Kentucky, by the Kanawha, and of Tennessee, by the valley of the Holston, will rush through this new channel. I know that some persons consider, that the trade of the Ohio will ever float down to New-Orleans: to this opinion, I will answer by one simple question. Do the people of the State of Ohio unite the Scioto to the lakes, to draw the trade from them towards New-Orleans, or the reverse?

The route proposed from the above-named States to the Atlantic, will be found shorter, and opened from 2 to 2½ winter months longer than northern canals. Lately a million worth of property was stopped on the New-York canal, by a premature frost. "The dismay and disappointment," said the New-York papers, "were not to be described." The period during which interruptions by ice might happen, would, generally, not exceed six weeks; and, what is important to consider, it would be confined to the vicinity of the summit level; so, that this once passed, the boats might continue to the end of the line, and frequently find the summit level re-opened at their return. The only difficulty would then be, to cross this point; for which, during the prevalence of frosts, many opportunities of mild weather would generally offer: whereas, in the northern canals, where the ice is thick, a few mild days would be of no avail; and, even if a boat was freed by them, it would not proceed far before it would again be locked up in ice.

Here would be no portage, no transshipment of produce, and all their consequent expenses. The same boats and men might continue from the Ohio over the Alleghany to tide water. With such advantages before him, who would think of taking a circuitous route from the State of Ohio, with the additional inconvenience and expenses of shifting the produce twice at a portage, and twice more at the lakes, besides the dangers attending their navigation, and all that, perhaps, to be stopped at last four months by ice? By the connexion through Virginia, things must undoubtedly be reversed, and the trade descend, instead of ascending the rivers through the State of Ohio.

To these considerations must be added the fact which has been communicated to me by the Hon. Judge Summers, that, during the last dry season, the water in the Ohio, below the Great Kanawha, was about 18 inches over the bars; and above that point, and up to Wheeling, only from 13 to 15; whereas, the Kanawha, as stated in the memorial of the citizens of Kanawha county to the General Assembly, affords 20 inches in the shallowest places.

Virginia is already in possession of the trade of a considerable section of North Carolina. By connecting the Kanawha with the Chesapeake, she will certainly secure the commerce of the greater part of three other rich States, and reclaim that of her own western section, which now flows towards Baltimore or New-Orleans. These are great inducements held out to Virginia for exertion: from the day of the completion of this great improvement, she will date her prosperity. Trade and capital, like iron and magnet, ever attracting one another, and multiplying their power by repeated contact, will unite and increase each other rapidly in Virginia. Then a great commercial city must necessarily rise, second only, if not equal, to New York. Such a city in a State, like a weight at the end of the political beam, gives it preponderance: its concentrated wealth enables it to achieve great things. New-York, Philadelphia, Boston, Baltimore, attest the truth of this assertion.

Even as regards manufactures, though she has been anticipated by them, Virginia has been better gifted than the northern States; and we may hope that the day is not distant when, instead of having her capital drained off from her, for commodities which she can raise herself, she will assume, by her enterprize and industry, the station which Providence seems to have marked for her.

The time has arrived, I think, when a system must be adopted to prosecute, with a steady step, all the improvements tending to these great benefits. Their progress must be gradual:

but, after the completion of the improvement of James river, it is confidently expected that the means for the prosecution of the great scheme of connexion, will develop themselves rapidly.

Very respectfully submitted,

C. CROZET.

* * *

The following estimate was prepared in obedience to the resolution of the General Assembly of the 9th of March, 1827, which is as follows:

Resolved, That the Civil Engineer be instructed as soon as practicable during the ensuing season, having regard to his other duties, to employ the necessary assistance, and make an accurate survey of the James and Jackson's river, with a view to the mode of improvement suggested above: beginning at Maiden's Adventure Falls, and proceeding to Dunlap's creek, if practicable, or as far up as the season will allow, designating the site of each dam that will be necessary, and its height, stating the length and fall of intermediate spaces, and whether, in his opinion, there is any place where a short canal is necessary; and that he report in detail to the next Legislature, the estimated cost of the whole, in such small sections as he may deem most convenient and advisable, with any other matter that he may think expedient.

ESTIMATE,

Of the Expense of improving James River by Locks and Dams, from MAIDEN'S ADVENTURE *up to* COVINGTON.

	Distances and lengths of the ponds.	*Length of each dam, exclusive of abutments.*	*Heights of Dams.*		*Lifts*		*Cost.*
			Above bottom.	*Above surface.*	*Of Dams.*	*Of Locks.*	
The height of the dam at *Maiden's Adventure*, is at low water, 7.40 feet.							
The swell of the water above the dam, .30							
The fall in the pond, 1.45							
Making in all, for the lift of the dam, 9.15	*miles. chs.*	*yards.*	*feet.*	*feet.*	*feet.*	*feet.*	*Dollars.*
Of which only the elevation gained above the dam, is set down here,	8—48	-	-	-	1.75		
1*st Dam*. On a ledge at the head of the pond near *Colonel Bolling's* upper landing: alluvial banks on both sides. This dam will cover the Red Rock shoals, *	3—10	300	9.80	7.80	8.75	-	10,720
Lock on the north side, in 3 1-2 feet depth of water,	-	-	-	-	-	8.10	5,080
N. B. The *north* or *south side* of the river, designates throughout this estimate, the *north* or *south* of its general direction, without regard to its bends.							
2*d Dam*. At a ledge half a mile above *Jefferson*: alluvial banks,	1—15	356	7.00	5.50	4.51	-	7,890
Lock on the north side, 1 1-2 foot depth, to which 1 1-2 foot is added from below,	-	-	-	-	-	4.30	3,670
3*d Dam*. At *Rock Castle* falls: rocky banks on the north side; common banks on the south: this dam will not raise †							
Amounts carried over,	12—73				15.01		27,360

---

* This dam will raise the water 2 feet high for about 50 yards, into the mouth of *Saunders's creek*, just above Jefferson. The sluice down to *Red Rock shoals*, is very crooked, and frequently very narrow.

† The sluice at *Rock Castle falls* crosses the river, which is very wide, several times, and fills at the lower end.

	Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of Dams.		Lifts		Cost.
			Above bottom.	Above surface.	Of Dams.	Of Locks.	
	miles. chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
Amounts brought over,	12—73	-	-	-	15.01	-	27,360
the water more than 2 feet along *Mosby's island*, and will not interfere with some low ravines on the north side,	2—14	355	4.75	5.25	4.81	-	4,810
Lock on the north side, in 2.50 feet depth, to which 1.10 is added from below,	-	-	-	-	-	4.40	3,650
For some blasting in this pond,	-	-	-	-	-	-	100
4th Dam. At a ledge just below *Bolling's island:* banks alluvial. This dam will not raise the water more than 4 1-2 feet at the lower, and 1 1-4 at the upper end of the island, which is from 20 to 22 feet high,	2—60	272	6.00	4.51	4.26	-	5,200
Lock on the south side, in 2 feet depth, to which 1.15 is added from below,	-	-	-	-	-	3.70	3,530
For some blasting in the pond,	-	-	-	-	-	-	50
5th Dam. A quarter of a mile above the head of Bolling's island: banks alluvial on both sides: This dam will raise the water 3 1-4 feet opposite *Cartersville*, and one foot into the mouth of *Willis's river*,	3—45	297	5.50	3.50	3.50	-	5,080
Lock on the north side, in 2 feet depth, to which 1 foot is added from below,	-	-	-	-	-	2.80	3,100
6th Dam. At a ledge a little above the mouth of Willis's river: cliff on the north side, common banks on the south: This dam will cover *Sampson's falls* and *Little Elk shoals:* it will raise the water 5 1-4 feet at the foot of *Elk island*, and about 3 feet at *Sampson's falls*,	3—35	206	7.50	5.97	5.90	-	5,120
Lock on north side, in 2 1-2 feet depth, to which added from below, 1.07,	-	-	-	-	-	5.20	4,040

7th Dam. A quarter of a mile above *Little Elk island:* cliff on the south side, alluvial bank on the north, about 24 feet high: This dam will not raise the water more than 3 feet at the head of *Elk island:* it will raise it 2.25 feet at *Columbia,* and cover the *Mullrack shoals* above it,	5—20	169	6.65	5.15	5.80	-	3,730
Lock on the south side, in 3 feet depth, to which 0.75 added from below,	-	-	-	-	-	4.70	3,840
For some blasting,	-	-	-	-	-	-	20
The north channel of Elk island must be closed at the head by a dam,	-	88	3.50	3.50	-	-	710
Amounts up to *Columbia,*	30—07	-	-	-	39.28	-	70,340
8th Dam. On the ledge at *Cobb's fall,* touching the lower end of the island: cliff on the south side, high banks on the north. This dam will raise the water 4 1-2 feet at the head of this island, which is from 20 to 22 feet high: it will raise it 3 feet at the lower, and 0.75 at the upper end of *Daniel's island,* and cover *Punch Creek falls,*	3—00	198	5.70	5.70	7.24	-	3,510
Lock on the north side, in 2 1-4 feet depth, to which 0.90 added from below,	-	-	-	-	-	6.64	4,370
For some blasting in this pond,	-	-	-	-	-	-	70
9th Dam. Among *Childers's falls:* bank on the south side bold, on the north side, alluvial,	2—35	178	4.56	4.06	5.86	-	2,690
Lock on the south side, in 1 1-2 foot depth, to which one foot is added from below,	-	-	-	-	-	5.36	3,510
For some blasting at the lock site, and thence to the channel,	-	-	-	-	-	-	190
Amounts carried over,	35—42	-	-	-	52.38	-	84,610

---

* The distance covered by this pond is one of those most favorable to a sluice improvement: but, besides that, as may be seen on the maps, and in the field-book, the soundings are frequently less than 2 1-2 feet; the channel among the ledges is narrow and winding in a great many places: to blast it out deep and straight, would cost more, and be less certain, than the plan here adopted.

	Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of dams.		Lifts		Cost.
			Above bottom.	Above surface.	Of Dams.	Of Locks.	
	miles. chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
Amounts brought over,	35—42	-	-	-	52.38	-	84,610
10*th Dam.* Both banks alluvial: This dam will not raise the water more than 6 inches opposite *New Canton*, and therefore will not interfere with some very low grounds and sluggish ravines on the north side,*	3—00	201	6.75	7.25	8.32	-	4,960
Lock on the north side, in 2 feet depth, to which 0.50 added from below,	-	-	-	-	-	7.70	4,500
11*th Dam.* At *Pheps' falls:* rocky bank on the south side, alluvial on the north: This dam will raise the water about 3 feet at the head of *Pheps' island;* 2 3-4 in *Slate river;* 2 1-2 feet at *Little Bremo*,† and 1 foot at *Big Bremo*, where the canal round the *Seven Islands falls* will terminate,	2—45	232	6.00	7.00	7.80	-	4,290
Lock on the north side, in 2 feet water, to which 1 1-4 added from below,	-	-	-	-	-	7.30	4,540
For some blasting in this pond,	-	-	-	-	-	-	30
For a dam across the head of the North channel, at Pheps' island,	-	35	3.00	-	-	-	240
Amounts up to the mouth of *Big Bremo*,	41—07	-	-	-	68.50	-	103,170

---

* *Spring Garden creek* is one of them.

† *Little Bremo* is sluggish to a considerable distance.

CANAL ROUND THE

SEVEN ISLANDS FALLS.

Distance, 3 *miles* 37 *chains*. *Lift*, 33.27 *feet*.

Between *Big Bremo* and the head of the *Seven Islands Falls*, the river is excessively wide, and interspersed with a great many very low islands, which would not allow of raising dams to an eligible height for the improvement of the navigation among these rapids. A canal is therefore indispensable. Both shores are very rugged; the northern one is preferable for the canal.

The beginning of the canal must be at the mouth of *Hardware river*; a short distance below which a dam 4 3-4 feet high above surface, should be raised on a favorable ledge. A higher dam would be desirable for the canal, but is prohibited by some low bottoms just above.

This dam is the twelfth in the estimate below.

The canal is calculated to be 45 feet wide and 4 feet deep.

The estimate of its cost is as follows:

	Distances in 4 pole chains.	*Cost.*
From the mouth of *Hardware river* to *Rock-fish creek*,	86.00	
Deep cutting at the beginning through good ground: the greatest depth is 11 feet for a short distance: some stony ground in the last 23 chains: For excavation,	-	9,685
For a guard-lock,	-	6,100
For a small culvert,	-	570
Double culvert over Rock-fish creek,	-	2,350
From *Rock-fish creek* to 20 chains above *Scott's mill race*, ground generally stony and in places rocky,	40.91	
For excavation, embankment, puddling,	-	7,911
Two small culverts,	-	1,270
Two locks of together 10.50 feet lift, allowing a fall of .73 or about 8 inches in this 1st section of the canal,	-	10,250
From the last point to the mill,	67.22	
The race should be extended upwards a distance of 20 chains, by which 3.29 feet will be added to the level of the race, and the mill more than compensated for the use of the race:		
For embankment, excavation, paving, puddling,	-	14,476
Bridge at the mill and turning the road,	-	450
For guard gates necessary to supply the mill with water,	-	500
From *Scott's mill* to *Big Bremo*, where the canal ends,	82.81	
For excavation, embankment, &c. along a rugged hill-side and cliff,	-	35,672
For one culvert and waste,	-	1,500
For three locks of 21.20 feet lift together; allowing a fall of .84 or 10 inches from the head of the race,	-	18,690
Total cost of the canal,	-	$ 109,424

	Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of Dams.		Lifts		Cost.
			Above bottom.	Above surface.	Of Dams.	Of Locks.	
	miles. chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
Amounts brought over, Locks and dams up to Bremo,	41—07	-	-	-	68.50	-	103,170
Amounts brought over, Canal at Seven islands,	3—37	-	-	-	33.27	-	109,424
12th Dam. At a ledge just below the mouth of *Hardware river*: alluvial banks: the lift of this dam is 5.25 feet, but because 5 feet are already included in the lockage of the canal, only 0.25 are set down here, it being the fall in the pond: This dam throws the water into the canal and has no lock,	1—05	350	6.00	4.75	0,25	-	6,730
For a dam across the smaller channel of the island,	-	45	2,00	2.00	-	-	200
13th Dam. * At a ledge a little above the highest of the islands and at the foot of the *Buffaloe shoals*: there being a fall of 2 1-2 feet just above, and the banks being bold, the height of this dam is not objectionable: alluvial banks on both sides,	1—45	367	8.25	7.06	6.77	-	10,320
Lock on the north side in 1.50 foot of water, to which 1.50 is added from below,	-	-	-	-	-	6.47	4,400
For a jetty above the lock to turn off drift timber,	-	-	-	-	-	-	300
14th Dam. † At a ledge among *the Buffaloe shoals*, half a mile above *Goode's spring*: cliff on the north side: alluvial banks on the south,	1—25	374	6.34	5.34	4.09	-	8,400
Lock on the north side in 1 1-2 foot depth, to which 1.75 is added from below,	-	-	-	-	-	3.84	3,570
15th Dam. ‡ At *Murray's ledge* in the Buffaloe shoals: alluvial banks on both sides: The middle of this pond will be opposite to *Scottsville*, where the water will be raised about 2 feet,	4—05	306	5.50	4.50	4.00	-	5,270

Lock on the south side in 2 feet depth, to which 1.56 is added from below,	-	-	-	-	-	3.20	3,360
For some blasting in this pond,	-	-	-	-	-	-	150
Amounts up to *Scottsville*,	52—44	-	-	-	116.88	-	255,294
16*th Dam.* § On a ledge at the foot of *Tooley's falls*, half a mile above *Totier's creek*: banks bold on both sides,	2—15	353	7.35	6.60	5.95	-	8,470
Lock on the north side in 3 3-4 feet of water,	-	-	-	-	-	5.55	4,000
17*th Dam.* On a ledge at the foot of *Perkins' falls*: banks alluvial on both sides. There is at the head of the falls some bottoms not more than 8 feet high, along which the river will be raised only 2 1-2 feet: The direction of this dam will, I think, reclaim this land, which is washed by the river,	0—60	343	3.40	5.40	4.75	-	3,380
Lock on the north side on dry rock, over which the water is raised 1.25 from below,	-	-	-	-	-	4.65	3,110
Excavation 1 1-2 foot deep to reach the channel,	-	-	-	-	-	-	220
18*th Dam.* At a ledge across the main channel of *Nicholas'* or *Perkins' island*, which is from 20 to 22 feet high: bold banks on the south side. In this pond will be *Nicholas' island*, and the two *Rock islands*; it will cover *Rock Island falls*,‖ and raise the water 1 1-2 foot at							
Amounts carried over,	55—39	-	-	-	127.58	-	274,474

---

* The *Buffaloe shoals* are wide and shallow: the sluices are very crooked and cross the river several times; they fill with gravel, and even mud was found at the foot of one of them: boats have often to be lifted up by hand-spikes.

† Above this dam the banks are in places not more than 12 feet high. In order to bear a proper ratio to their height, the dam should not be more than from 4 to 5 feet high. The river is here so wide and rapid that it never rises high: the greatest height recollected is from 12 to 13 feet: In general, as alluvial bottoms along a river must evidently have been produced by it, they indicate pretty correctly the relative height of freshets at different places. Among the *Buffaloe shoals* on the north side, there is a sluggish run into which the pond will be 2 feet high for about 60 yards.

‡ At the head of this pond is *Totier creek*, which has generally standing water at its mouth: it will be raised 1 1-2 foot higher.

§ The sluice through this fall fills with gravel.

‖ This sluice collects gravel, though most of the river is turned into it by the ledge.

		Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of Dams.		Lifts		Cost.
				Above bottom.	Above surface.	Of Dams.	Of Locks.	
		miles. chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
	Amounts brought over,	55—39	-	-	-	127,58	-	274,474
	Warren; but will not interfere with the mill on *Ballinger's creek*,	1—60	198	7.20	6.20	4.80	-	4,700
	Lock on the north side, in 1 foot depth; the water is raised 2 feet from below,	-	-	-	-	-	4.50	3,700
	For a small dam to close the smaller channel at Nicholas' island,	-	22	3.50	-	-	-	240
19*th Dam.*	A quarter of a mile above *Warren:* Rocky hill on the south side, alluvial banks on the north: This pond passes over *Abel's gulph*, and reaches the foot of *Goolsby's falls*, at an elevation where it will not interfere with the mill: but even if it did, there could be no objection made to it, as a greater head will be given to the mill by the next dam,	1—05	248	7.05	6.05	5.80	-	5,550
	Lock on the south side, in 1 foot depth, to which 0.75 is added from below,	-	-	-	-	-	5.60	3,660
	For blasting below the rock,	-	-	-	-	-	-	190
20*th Dam.*	At the foot of *Goolsby's falls*, on a good ledge: common banks on both sides: this dam will raise the water 2 1-2 feet at the head of the falls, and benefit the mill,	1—45	330	8.10	8.10	3.70	-	8,980
	Lock on the south side in 1 1-4 foot, to which 1 foot is added from below,	-	-	-	-	-	8.40	4,560
	For some blasting in this pond,	-	-	-	-	-	-	20
21*st Dam.*	A little above *Anderson's creek:* banks alluvial on both sides: This dam will cover *Fowler's shoals*, and throw 3 1-2 feet of water into the mouth of *Rock-fish river*,	4—05	198	6.30	4.80	5.15	-	4,560

	Lock on the south side in 1 1-2 foot depth, to which is added from below, 1 foot,	-	-	-	-	-	4.35	3,610
	Blasting from the lock to the channel,	-	-	-	-	-	-	150
22d Dam.	At the head of *Robin's falls:* rocky abutments on the north side, alluvial banks on the south: This pond extends along *Dog's island*, which is only from 8 to 9 feet high; the water will be raised 3 feet at its lower, and only a few inches at its upper end,	1—05	220	4.50	3.90	5.10	-	2,950
	Lock on the north side in 1 1-2 foot depth, to which no addition is made: This lock will require no pier; it will naturally be protected by a large rock,	-	-	-	-	-	4.80	3,490
	For blasting below the lock, and also in the pond above,	-	-	-	-	-	-	540
23d Dam.	At the foot of *Bellows' falls:* common banks on both sides,	0—70	277	6.10	5.35	5.25	-	4,560
	Lock on the north side in three feet depth, to which 0.60 is added from below,	-	-	-	-	-	5.05	8,960
	For blasting off some prominent rocks at the head of the falls,	-	-	-	-	-	-	60
24th Dam.	At the head of the *Fish-pond shoals:* solid bank on the south, alluvial bank on the north side,	0—75	236	4.25	4.25	4.00	-	2,950
	Lock on the south side, in 1 1-2 foot depth, to which 0.75 is added from below,	-	-	-	-	-	3.80	3,270
25th Dam. †	At the head of the *Fish-pond shoals*, a quarter of a mile below *Sycamore island:* bold banks on the south, com-							
	Amounts carried over,	66—64	-	-	-	166.38	-	336,074

---

* Instead of an improvement by dams at this place, a canal might be made on either side. On the south side, the race of the mill may be enlarged, and a lock made just at the mill, to drop into the pond raised over Abel's gulph. This canal, with a low dam at the head of the falls, would cost about $ 4,000 more than the plan here adopted.

On the north side, by raising a dam about 7 feet high at the head of the falls, a canal may be taken out a short distance above it, and carried down to very near Warren: Its lockage would be 18 feet. It would add about $ 7,500 to the cost of the improvement. It might, however, be rendered advisable, by an application for water power; whereas, the canal on the south side could not be compensated by any private contract, since no water rent would be obtained from the existing mill.

At the head of this pond is *Anderson's creek*, which is sluggish for a short distance; the water will be raised only 1 1-2 foot into it.

† It would be desirable to raise this pond up to Warminster, but *Sycamore island* is too low to permit it. The dam will, I think, be an advantage to the island: The current which cuts now through it, will keep more straight in the channel, in consequence of the dam.

			Above bottom.	Above surface.	Of Dams.		
	miles. chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
Amounts brought over,	66—64	-	-	-	166.38	-	336,074
mon ones on the north side: This pond raises the water 5 1-2 feet at the foot, and 1 foot at the head of the island, which is 10 feet high,	1—65	243	6.50	6.00	5.87	-	4,930
Lock on the north side in 2 1-2 feet depth and above the dam, the water is raised 0.75 from below,	-	-	-	-	-	5.57	3,780
For some blasting in the pond,	-	-	-	-	-	-	150
26th Dam. At *Spencer's ledge*, half a mile above *Sycamore island*, and half a mile below *Dr. Patteson's marble quarry*: this pond reaches half a mile above *Warminster*; common banks on both sides,	3—05	220	3.70	2.70	3.00	-	2,410
Lock on the south side above the dam in 2 feet depth, to which 0.60 is added,	-	-	-	-	-	2.40	2,760
Amounts up to *Warminster*,	71—54	-	-	-	175.25	-	350,104
27th Dam. At the first ledge above *Warminster*: rocky abutments on the south, high banks on the north side: this pond covers the *Yellow Gravel shoals*,	2—20	188	6.90	5.70	6.00	-	4,250
Lock on the north side in 1 foot depth, to which 0.80 is added from below,	-	-	-	-	-	5.50	3,680
28th Dam. At the foot of the *Swift-Island falls*, and below the island: good banks on both sides: the water will not be raised more than 4 1-2 feet at the lower, and 1-2 foot at the upper end of the island, which is not low,	0—50	159	8.40	6.60	6.38	-	4,900
Lock on the south side in 3 feet depth, to which 0.60 is added,	-	-	-	-	-	-	4,670

	A canal round these falls would require 14 feet cutting at the beginning, and 8 at the lower end, in a distance of 560 yards, with a dam 8 feet high at the head of the falls: this canal is not advisable.							
29th Dam.	At a ledge just above the head of the island, cliff on the north side,	1—20	220	6.65	5.65	5.00	-	4,240
	Lock on the south side in 1 foot depth, to which 0.75 is added,	-	-	-	-	-	4.75	3,460
30th Dam. †	At *Cabell's big ledge,* cliff on the south side common banks on the north: this pond will cover *Duncan's shoals,*	2—05	264	2.40	3.00	4.00	-	2,120
	Lock on the north side, above the dam, in 3 1-2 feet of water, to which 0.46 added,	-	-	-	-	-	3.60	3,230
31st Dam. ‡	On a ledge a quarter of a mile above *Cabell's little island,* rocky abutments on the south, alluvial banks on the north side: this pond will cover *Cabell's shoals,* and contains *Hughes' island;* the water will be raised only 1 1-2 foot at its lower end, and 8 inches at its head: the height of the island varies from 9 to 20 feet,	2—60	197	8.25	7.50	9.00	-	5,340
	Lock on the south side, in 2 feet depth, to which 0.80 is added from below,	-	-	-	-	-	8.40	4,900
32d Dam.	At *Tyree's ledge,* below *Tye river:* rocky abutments on the south side, alluvial banks on the north side: this pond will raise the water 3 feet at the mouth of Tye river, and cover *Cabell's fish-dam,*	1—60	235	3.30	2.80	5.00	-	2,010
	Amounts carried over,	82—29	-	-	-	210.63	-	392,904

---

[*] A rise of four feet sends the water 100 yards up *Mayo's* or *Swann's creek,* at *Warminster:* The pond will be only 1 foot high at its mouth, and will not even enter it.

[†] Towards the head of this pond, is *Cabell's little island,* which is forming: it did not exist eight or nine years ago; the channel was then on the left of it: this is now filling, and the present channel is on the right of the island.

[‡] Below *Hughes' island,* there is a sluice which we found altogether filled with sand; boatmen say that this happens almost every fresh. The sluices along *Cabell's island* are very shallow, hardly 8' deep. There is lime-stone in the neighbourhood of *Tye river.*

		Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of Dams.		Lifts		Cost.
				Above bottom.	Above surface.	Of Dams.	Of Locks.	
		miles. chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
	Amounts brought over,	82—29		-	-	210.63	-	392,904
	Lock on the south side, in an average of 1 1-2 foot depth, to which 0.65 is added,	-	-	-	-	-	4.60	3,580
	Blasting in this pond,	-	-	-	-	-	-	6
33d Dam.	At the *Welch falls*: cliff on the north side, alluvial banks on the south,	1—35	176	5.50	5.00	6.60	-	2,900
	Lock on the south side, in 1 foot depth, to which 0.50 is added; the lock in the pond,	-	-	-	-	-	6.30	3,780
34th Dam.	At *Burke's big ledge*: good banks on both sides: this pond will cover Burke's and Joel's falls,	2—35	198	9.30	7.30	6.90	-	6,390
	Lock on the north side, in 1 foot depth, to which added from below 1.20; the lock to be above the dam,	-	-	-	-	-	6.40	3,794
	Blasting in the pond,	-	-	-	-	-	-	10
35th Dam.	At the lower end of *Megghinson's falls*, just above *Greenway*: good abutments on the north side; banks on the south,	1—35	191	7.65	6.65	7.25	-	4,670
	Lock on the north side in 1 foot depth, to which 1 1-4 is added from below,	-	-	-	-	-	6.95	4,250
	For some blasting,	-	-	-	-	-	-	10
36th Dam.	At a ledge near the foot of *Hugen's shoals*: common banks on both sides: This pond will cover *Freeland's falls* up to the mouth of the creek,	1—60	194	9.55	7.55	8.25	-	6,810
	Lock on the north side, in 1 1-2 foot depth; the water is raised 0.50 from below,	-	-	-	-	-	8.00	4,700
37th Dam.	At a ledge immediately above the mouth of *Davis's* or *Freeland's creek*: rocky hill on the north side, banks on the south: This dam will cover *Shinall's falls*, and							

reach above *Bent creek*, above which the water is so much intersected by ledges, that some blasting will be indispensable, it being inexpedient to raise this dam higher, on account of the low grounds at its abutments: at *Bent creek* the water will be raised 2 1-4 feet,	1—60	198	7.50	7.10	7.50	-	4,690
Lock on the south side, in 3 1-2 feet depth, to which 0.30 is added,	-	-	-	-	-	7.25	4,570
For some blasting at the head of the pond,	-	-	-	-	-	-	300
38th Dam. At a ledge half a mile above *Bent creek*: rocky abutments on the south, alluvial banks on the north side: This dam will raise the water only 3 1-2 feet at the lower end of the first *Allen's island*, where it is only 9 feet high,	0—65	264	7.00	6.40	6.50	-	5,600
Lock on the north side, in 1 1-2 foot depth, to which 1 1-4 foot is added from below,	-	-	-	-	-	-	4,200
39th Dam. † A quarter of a mile above the lower end, and in the north channel of the lower *Allen's island*: good abutments on the north side, the island on the south, which being only 10 feet high, the dam must be made low: as, however, the river is wide in both channels, and the fall great, it cannot rise high there,	0—40	91	4.10	6.10	2.70	-	1,850
Lock on the north side, in 1 foot depth, to which 1 3-4 foot is added,	-	-	-	-	-	-	3,160
40th Dam. A quarter of a mile below the head of the lower *Allen's island*: good abutments on the north side; the island on the south. This dam will raise the water 1.75 foot at the head of Allen's upper island, which is 18 1-2 feet high,	2—40	98	6.00	4.00	3.80	-	1,930
Amounts carried over,	94—79	-	-	-	260.18	-	460,104

---

* The sluice here is so shallow that though the water was about five inches above low stage, a boat dragged and had to be lifted with handspikes, with 5 hogsheads of tobacco. Just below the *Welch rock* there is a remarkable deep hole in the river, which seems produced by the re-action of the river when high, beating against a large rock on the edge of this hole: its depth measured is 25 feet.

† Along *Allen's island*, the water is so shallow that it takes some times a whole day for boats to pass it.

	Dista len pon	Lengt dam of a	ve om.	Above surface.	Of Dams.	Locks.	
	miles. chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
Amounts brought over,	94—79	-	-	-	260.13	-	460,104
Lock on the north side, in 1 foot depth, to which 1 1-4 foot is added,	-	-	-	-	-	3.50	3,410
The channel between the two islands to be closed by a dam,	-	25	4.00	3.00	-	-	540
The south channel must be closed by a dam near the head of the main island,	-	170	3.25	1.75	-	-	1,330
41st *Dam.* At *Thornton's ledge*, 1 1-2 miles above *Allen's island*: good abutments on both sides. This pond will cover the *White Mare shoals*, and part of *Rack Island falls*. *Rack island* is from 20 to 22 feet high, but has a gap in it just at the foot of the falls, which appears to have been cut through it by some high freshet: this cut is only from 7 to 10 feet high: the water will be raised only 2 1-2 feet opposite to it,	1—75	233	1.60	3.10	4.50	-	1,010
Lock on the north side, in 1 1-2 foot depth, to which 1 1-4 foot is added from below: the lock must be above the dam,	-	-	-	-	-	4.10	3,390
42d *Dam.* In the north channel of *Rack island*, and half way up the falls: good abutments on the north side; island on the south. The water will be raised 2 1-2 feet at the head of the island, where it is about 10 feet high: the pond will hold *Christian's island*, which is 20 or 22 feet high, except at a narrow and short strip only 7 to 8 feet high: the water will be raised 1 1-2 foot along the island,	1—50	75	6.20	4.70	5.00	-	1,610
Lock on the north side, in 1 foot depth, to which 0.30 is added,	-	-	-	-	-	4.70	4,108

	For blasting out a channel from the lock,	.	.	.	.	.	.	140
	For closing the south channel, which is almost entirely obstructed by high ledges at a bluff,	.	20	.	.	.	.	120
43d *Dam.*	At the foot of *Little Patteson's falls*: rocky abutments on the south side banks on the north,	0—30	128	8.00	6.50	6.60	.	3,490
	Lock on the north side, in 1 foot depth, to which 0.30 is added,	.	.	.	.	.	6.50	4,100
	For blasting out a short channel below the lock,	.	.	.	.	.	.	180
44th *Dam.* *	At the main ledge of *Big Patteson's falls*: firm bank on the south, high one on the north side,	0—40	220	7.50	6.50	5.40	.	5,170
	Lock on the north side, in 1 foot depth, to which 1 1-2 foot is added from below,	.	.	.	.	.	5.30	3,970
15th *Dam.*	At the highest ledge of *Patteson's falls*: firm bank on the south, common one on the north side: This dam will raise the water about 5 feet at the foot of *Dillard's island*, where it is 15 feet high,	2—00	210	7.50	6.50	6.00	.	4,960
	Lock on the north side, in 1-2 foot depth, to which 1 1-4 is added,	.	.	.	.	.	5.60	3,710
16th *Dam.*	At *Dillard's falls*, in the south channel of the island: rocky hill on the south, island 22 feet high on the north side. This dam will raise the water 2 1-2 feet at the head of the island; 1 3-4 at *Staples' mill* on *Stonewall creek*, the wheel of which is high; 1 1-2 at the mouth of *Porridge creek*, on which is *D. Staples' mill*, the wheel of which is 3 1-2 feet above low water: consequently, the dam will interfere with neither,	3—00	198	6.70	5.70	6.60	.	4,080
	Lock on the north side, in 1 foot depth, to which is added from below, 0.50,	.	.	.	.	.	6.00	3,920
	Amounts carried over,	104—34	.	.	.	294.23	.	509,214

---

* At the head of these falls, there is a creek which contains standing water for about 150 yards above its mouth: the water will be made one foot higher in it. A canal round Patteson's falls should begin at the mouth of this creek: it would be a mile long, and would cost about $ 8,000 more than the improvement by dams: an application for water power might recommend it.

					Of		
	miles. chs.	yards.	feet.	feet.		feet.	
Amounts brought over,	104—34	-	-	-		-	
For blasting below the lock, and also at the head of the pond,	-	-	-	-	-	-	120
For closing the north channel at Dillard's island, by a dam,	-	158	4.00	2.50	-	-	1,560
47th Dam. At a ledge just above *Porridge creek*: common banks on both sides. This pond will contain *Chace island*, and raise the water 6 feet at its lower end where it is 18 feet high, and 2 feet at the upper end where it is only 11 feet high. The pond will cover *Orange Cat falls*,	1—70	160	6.75	5.75	6.10	-	3,700
Lock on the north side in 1 1-2 foot depth, to which 0.50 is added,	-	-	-	-	-	5.70	3,640
For blasting out a short channel through the ledge below the lock,	-	-	-	-	-	-	40
48th Dam. At the foot of *Stovall's falls*: common banks on both sides. This dam will raise the water 1 1-2 foot at *Galt's mill* on *Stovall's creek*: the height of the wheel above low water is 3 feet; the pond will be only 0.50 foot high at the mouth of *Joshua's creek*,	1—75	127	5.70	5.20	5.80	-	2,540
Lock on the north side in 1 1-2 foot depth, to which 0.50 is added.	-	-	-	-	-	5.40	3,820
49th Dam. At *Little Joshua's falls*, just above the creek of the same name: rocky abutments on the south; bank alluvial on the north. This dam will cover *Joshua's falls*, the sluice in which is shallow and winding,	1—10	146	7.90	6.40	7.10	-	3,790
Lock on the north side above the dam in 1 foot depth, to which is added from below 0.50,	-	-	-	-	-	7.00	3,930

50th Dam.	Above *Joshua's falls*: good abutments on the north side, common bank on the south: This pond will cover the *Collar Bone shoals*, in which the sluice is only 6 inches deep, gravel,	1—45	165	7.90	5.90	6.50	-	4,940
	Lock on the south side, in 3 feet depth, to which 0.50 is added from below,	-	-	-	-	-	6.20	4,900
51st Dam.	At *Slippery falls*: common banks on both sides: This pond will hold *Buzzard's islands*, which are low, and not valuable: the water will be raised 3 feet at the lower, and 1 foot at the upper end of them. For the last 21 miles, much difficulty is added to the location of dams, by the great number of islands in the river,	1—70	248	7.30	6.05	7.40	-	5,810
	Lock on the north side, in 6 inches depth, to which 1 foot is added,	-	-	-	-	-	7.00	4,070
	To open a short channel below the lock,	-	-	-	-	-	-	80
52d Dam.	At *Ned's shoals*: common banks on both sides: This pond will cover *Flat Rock falls*,	1—15	330	4.50	3.50	4.60	-	4,170
	Lock on the north side, 15 yards away from shore, in 3 feet depth, to which 1 foot is added,	-	-	-	-	-	4.40	3,650
53d Dam.	At the *Blue Rock falls*: cliff on the north side; high rocky banks on the south: This pond covers *Archer's falls*, and raises the water 2 feet at the mouth of *Archer's creek*, on which is *Lewis's mill*, the wheel of which is 4.60 feet above *low-water mark* in James river, and will not be interfered with. The dam would be better on some other site, but Lewis's mill prevents a choice,	1—40	231	6.00	5.00	6.40	-	4,660
	Lock on the north side, in 3 feet water, to which 0.75 is added from below,	-	-	-	-	-	6.10	4,180
	For blasting off some prominent rocks, great part of which will be used in the dam,	-	-	-	-	-	-	100
54th Dam.	At *Possum Island shoals*, in the north channel of the island: good banks on both sides: the island is 15 feet high,	0—40	177	6.20	5.00	5.50	-	3,370
	Amounts carried over,	115—79	-	-	-	348.63	-	570,974

	Distances and lengths of the ponds.	*Length of each dam, exclusive of abutments.*	***Heights of Dams.***		***Lifts***		***Cost.***
			Above bottom.	*Above surface.*	*Of Dams.*	*Of Locks.*	
	miles. chs.	*yards.*	*feet.*	*feet.*	*feet*	*feet.*	*Dollars.*
Amounts brought over,	115—79	-	-	-	343.63	-	570,974
Lock on north side, in 2 feet depth, to which is added from below, 1 foot,	-	-	-	-	-	5.40	4,020
55th *Dam.*[*] In the north channel of the island: cliff on the north side: the island is 15 feet high: This dam will raise the water 3 1-4 feet at the head of the island, and also at the mouth of Bolling's creek,	1—60	177	7.05	5.05	4.50	-	3,850
Lock on the north side, in 2 feet depth, to which 1 1-4 is added from below.	-	-	-	-	-	4.10	3,680
The smaller channel must be closed at its head by a dam: cliff on one side,	-	44	4.00	3.25	-	-	510
56th *Dam.* At *Setting pole shoals*: rocky on the north side, alluvial banks on the south: This dam will raise the water 2 1-2 feet at the lower end of *Winston's* or *Lynch's island*, which is 22 1-2 feet high there,	1—50	222	8.90	7.90	7.60	-	6,540
Lock on the north side, in 1 1-2 foot depth, to which one foot is added from below,	-	-	-	-	-	7.25	4,490
57th *Dam.*[†] On a ledge in the north channel of *Lynch's island*: rocky abutments on the north side; island on the south. This dam will raise the water 1 1-2 foot at the head of the island, and at *Lynchburg*, at the mouth of *Blackwater creek*, and 2 1-4 at the foot of *Cabell's island*,	2—28	176	6.70	5.70	5.40	-	3,660
Lock on the north side, in 1 1-2 foot depth, to which 1 foot is added from below	-	-	-	-	-	4.90	3,870
There is across *Winston's island* a very deep and wide gap, which appears to have been cut by some high freshet: a dam raised below it, in the north channel,							

might have the effect of causing an over-fall from this into the other channel, through this gap, which would thereby be farther increased: it must, therefore, either be closed by an embankment, or, better, a dam must be made below it in the south channel, whereby a fine basin of more than a mile will be formed along the main road to Lynchburg, which will be a great advantage to this town. This dam will be half a mile above the other, and below the gap: it is probable that the two dams united will not only prevent the further deepening of the gap, but even cause its filling up to a higher level: For this dam,	-	119	5.50	4.25	-	-	2,170
Total amounts up to *Lynchburg*,	121—57	-	-	-	361.13	-	603,764

---

* There is a marble quarry near the head of *Possum island.* Dams might be somewhat cheaper in the smaller arm of the river: but, some difficulty would be found at its lower end, where a considerable sluice must be made to reach the main channel, it not being possible to raise the preceding dam higher. The extra expense thus incurred, would probably amount to more than the difference of cost of the dams in both channels.

† The soundings exhibited in the field-books, were taken along the shore, at some distance from the bank: they show that the water is too shallow on the *Lynchburg* side: it is said, that on this side the water was formerly very deep; but, since the building of the bridge, the piers obstructing the current from *Blackwater creek*, this side has filled up: on this account the north channel is preferred for the navigation, it being apprehended that further depositions may take place in the south channel, the head of which is now very shallow.

CONTINUATION OF THE

	Distances lengths ponds.	Length o da	of Dams.		Lifts		Cost.
			bottom.	su	Of Dams.	Of Locks.	
	miles. chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
Amounts brought over,	121—57	—	-	-	361.13	-	603,764
At a ledge between *Mitchell's bridge* and *Harris's creek:* rocky abutments on the north side, *Cabell's 1st island,* 21 feet high, at the south end,	—55	150	4.90	5.40	5.27	-	2,210
Lock on north side, in 3 feet depth, to which 0.63 is added,	-	-	-	-	-	5.10	3,870
This dam will raise the water 1 1-4 foot between the two *Cabell's islands*. The small channel between them to be closed by a low dam of mere brush and stone,	-	45	1.25	-	-	-	30
Two of the old piers of Mitchell's bridge should be removed: the stone will be useful							
At the upper ledge of Harris's shoals, about the middle of the *2d Cabell's island:* rocky on the north side; the island 26 feet high on the south,	1—15	121	5.80	4.60	5.60	-	2,210
Lock on the north side, in 2 1-4 feet depth, raised 1 foot,	-	-	-	-	-	5.30	3,950
This dam will raise the water 4 feet at the upper end of Cabell's island, and likewise at the foot of *Hardwick's island*. A dam must also be made across the south channel, and in prolongation of the same ledge and site: rocky abutments on the south side, island on the north,	-	40	5.60	4.60	-	-	1,100
At a ledge above *Hardwick's falls*, and about the middle of the island: good abutments on the north side; island 18 feet high on the south,	1—60	99	5.50	4.50	4.10	-	1,770

	This dam will raise the water 3 feet at the head of Hardwick's island, and 2 1-2 round *Hog island*. The south channel should be closed by a dam: rocky on the south, island on the north side,	-	55	4.00	3.00	-	-	980
	Lock on the north side, in 2 feet depth, raised 1.10,	-	-	-	-	-	3.70	8,490
61st Dam.	At the foot of *Judith's falls* and *Scott's island:* good bank on the south side, cliff on the north,	1—55	210	6.70	7.70	7.20	-	4,290
	This dam will raise the water 8 feet at the lower, and 2 1-4 at the upper end of Scott's island. Many large rocks in Judith's falls would be in the way if not levelled off; but so near the dam, they will furnish stone, and consequently occasion no extra expense.							
	Lock on the south side, in 2 feet depth, raised 1.20,	-	-	-	-	-	6.80	4,410
	For blasting near the head of this pond, and in other places,	-	-	-	-	-	-	310
62d Dam.	At the foot of the *Crooked falls:* rocky banks on both sides,	1—00	153	5.50	7.50	8.00	-	2,560
	Lock on the north side, in 3 1-2 feet depth,	-	-	-	-	-	7.80	4,590
	For blasting in this pond,	-	-	-	-	-	-	70
	This dam will raise the water 5 feet at the foot of *Chesnut island*, and 2 1-2 at the gap between the two islands.							
63d Dam.	At *Tinsley's fish-dam*, near the head of Chesnut island: rocky on the north side; island on the south side, about 15 feet high,	1—55	113	4.90	4.90	5.60	-	1,740
	The south channel must be closed by a low dam,	-	30	2.25	2.25	-	-	200
	Lock on the north side, in 1 1-2 foot depth, requiring the balance to be blasted out.	-	-	-	-	-	5.20	3,830
	The water will be raised 2 1-4 feet at the head of Chesnut island, and six inches at *Bethel*.							
64th Dam.	At *Bethel falls:* high banks on both sides,	—75	145	9.70	8.10	9.10	-	5,440
	Lock on north side, in 3 feet depth, raised 6 inches,	-	-	-	-	-	8.90	5,130
	A little above the site of this dam, are *Bald Eagle islands* and *falls;* at the foot of the main island, which is high, the water will be raised 8 feet, and only 1-2 foot at its head. The whole fall occurring in the short length of the island, requires, necessarily, a dam of the height here stated, to overcome it.							
	Amounts carried over,	130—62	-	-	-	406.09	-	655,944

	Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of Dams.		Lifts.		Cost.
			Above bottom.	Above surface.	Of Dams.	Of Locks.	
	miles. chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
Amounts brought over,	130—52				406.00		655,944
65th Dam. A quarter of a mile below the *Horse-fording island*: rocky bank on the south side, alluvial on the north,	2—00	132	5.70	6.70	7.40		2,100
Lock on the north side, in 3 1-2 feet depth,						7.00	4,400
This pond will cover *Davis' falls*, and hold the *Horse-fording island* and *Persimon island*. Along the first the water will be raised 5 feet, and along the second, 4 1-2 feet at the lower, and only 6 inches at the upper end.							
66th Dam. At the foot of *Captain's falls*: common banks on both sides,	—40	132	8.10	7.60	8.00		3,960
Lock on the south side, in 3 1-2 feet depth,						7.90	4,780
This pond will be 2 feet high at the mouth of *Pedlar river*, and rise some distance up Pedlar falls.							
67th Dam. Among the *Pedlar falls*, which are very rapid: banks gravelly for some distance on both sides,	1—75	154	9.70	7.70	6.90		5,000
Lock on south side, in 1 1-2 foot depth, raised 1 1-2 foot,						6.50	4,400
68th Dam. At the foot of *Coleman's falls*: firm bank on the north side, common alluvial bank on the south side,	—40	120	4.00	4.90	5.30		1,500
Lock on the north side, in 3 1-4 feet depth,						5.20	3,820
69th Dam. At *Singe Cat falls*, in the north arm of the river:* cliff on the north side; *Roach's island*, 19 feet high, on the south side,	1—20	72	7.30	6.20	8.50		1,870
Lock on the north side, in 3 feet depth, raised 0.50,						8.20	4,600
This dam will raise the water 0.60 at the head of Roach's island, where the south channel should be closed by a slight dam,		45	1.80				80

	A small cut through the island must also be closed,	-	30	1.00	-	-	-	10
70th Dam.	At a fish-dam 3-4 of a mile above Roach's island: rocky bank on the south, good bank on north side,	1—70	125	6.80	4.80	4.90	-	2,740
	Lock on the north side in 3 feet depth, raised 0.50,	-	-	-	-	-	4.50	3,780
	This dam will raise the water 3 feet at *Waugh's ferry*.							
71st Dam.	Among *Jack's falls*: cliff on the north side, high bank on the south	—45	135	8.00	6.00	5.90	-	3,580
	Lock on the north side, in 2 1 2 feet depth, raised 0.50,	-	-	-	-	-	5.80	4,210
72d Dam.	A little above the head of *Rush-branch falls*: rocky on the north side, common bank on the south. This pond will hold *Big* or *Clay's island*, at the foot of which, the water will be raised 4 1-2 feet, and retain its level at the head,	1—50	135	7.50	6.50	7.10	-	3,900
	The north channel must be closed by a slight dam,	-	50	1.50	-	-	-	40
	This low dam will turn all the water into the south channel, which will probably be kept deep enough at the head of the island, after having excavated its gravelly bottom 6 inches deeper for a short distance, which may cost,†	-	-	-	-	-	-	40
	Lock on north side, in 3 1 2 feet depth.	-	-	-	-	-	6.80	4,450
73d Dam.	Between the head of *Clay's* and foot of *Racoon island*: cliff on north side, bold bank on the south,	1—00	120	6.60	4.10	4.60	-	2,540
	Lock on the south side, in 3 1-2 feet depth above the dam,	-	-	-	-	-	4.40	3,430
	This pond contains Racoon island, along which the water will be raised from 1 to 4 feet: The island is low, and of little value.							
	The length of pond here stated is only up to the lower end of the canal through the Blue Ridge, where the water will be raised 1.25 feet.							
	Amounts carried over,	141—72	-	-	-	464.60	-	720,984

---

* In this north arm of the river the current at high water is not strong, as it principally passes then through the south channel, though dry at low water.

† *Clay's island* is low and not valuable; it is not in cultivation.

	Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of dams.		Lifts		Cost.
			Above bottom.	Above surface.	Of Dams.	Of Locks.	
	miles chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
Amounts brought over,	141—72	-	-	-	464.60	-	720,984
In the report of 1826, it was remarked that the section from Lynchburg to the Blue Ridge canal is the most difficult to improve by a continuous canal. It will appear from the above statement, that the number of islands in that distance presents great obstacles to the location of a lock and dam improvement, as they seldom afford good abutments for such works,							
Total amounts up to the foot of the Blue Ridge canal,	141—72	-	-	-	464.60	-	720,984

THE CANAL THROUGH THE BLUE RIDGE,

Extends from the foot of the Irish falls to the mouth of the North Branch: its length is 6 miles and 60 chains; its lift 96 feet, which will be reduced to 94.75, when the preceding pond shall have been raised.

IMPROVEMENT ABOVE THE BLUE RIDGE.

	Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of Dams.		Lifts		Cost.
			Above bottom.	Above surface.	Of Dams.	Of Locks.	
N. B.—The following distances are reckoned from the head of the canal at the mouth of the North Branch. The elevations from the top of the dam which turns the water into the canal.							
The swell over the dam was found to be .37, the fall in the pond .96, in all	miles. chs. -	yards. -	feet. -	feet. -	feet. 1.33	feet.	Dollars.
The length of the pond from the dam is 2 miles and 5 chains; but in continuation of the improvement above the canal, only	1—64						
1st *Dam.* At the head of the pond formed by the dam of the canal, just below *Paxton's fish-dam:** common banks on both sides,	—65	160	7.00	5.00	5.50	-	3,860
Lock on the south side, in 2 feet depth,	-	-	-	-	-	5.30	4,100
2d *Dam.* † At the *Quarry falls*, a quarter of a mile below *Greenlee's ferry*: rocky on the south, alluvial on the north side,	1—45	165	6.60	5.10	6.50	-	3,380
Lock on the south side, in 2 feet depth,	-	-	-	-	-	6.20	4,360
3d *Dam.* At *Irvine's ledge*: on the north side rock, on the south, common bank. This pond will cover *Bradford's ledge*,	1—30	115	8.90	7.40	7.50	-	3,570
Amounts carried over,	5—44	-	-	-	20.83	-	19,270

---

* The number of fish-dams above the Blue Ridge, and particularly above Beale's bridge, beyond which the navigation has not been improved, rendered it difficult to ascertain exactly the nature and depth of many ledges. This was also somewhat the case between Lynchburg and the canal. When the actual location of the dams takes place, these fish-dams must be removed; and it is probable that under them many good sites for dams may then be discovered, some of which may be preferred to those that were observed.

† Above this point, nearly all the cliffs and ledges are limestone; good building stone can also be obtained every where within a short distance of the river, and most frequently on its very margin.

	Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of Dams.		Lifts		Cost.
			Above bottom.	Above surface.	Of Dams	Of Locks.	
	miles. chs.	*yards.*	*feet.*	*feet.*	*feet.*	*feet.*	*Dollars.*
Amounts brought over,	5—44	-	-	-	20.83	-	19,270
Lock on the north side, in 2 1-2 feet depth, raised 0.50 from below.	-	-	-	-	-	7.20	4,640
4th Dam. At *Crawford's shoals:* common banks on both sides: This pond will cover *Barger's shoals.* The water will be raised 0.60 foot at Gilmore's mill, on *Cedar creek,* which passes under the Natural bridge. The wheel of the mill is 16 feet diameter, and 6 1-2 feet above the level of James river; so that the pond will not interfere with it,	1—60	104	9.50	7.56	7.20	-	3.960
Lock on the north side, in 2 feet depth, raised 1.06,	-	-	-	-	-	6.80	4,560
5th Dam. At *Vineyard's falls:* firm banks on both sides,	1—05	121	4.90	5.40	5.30	-	2.080
Lock on the north side, in 3 feet depth, raised 0.63,	-	-	-	-	-	5 10	3,870
6th Dam. At *Campbell's falls:* common banks on both sides,	1—20	88	8.00	6.50	6.00	-	2,840
Lock on the north side, in 2 feet depth, to which is added from below 1.06,	-	-	-	-	-	5.70	4,160
Blasting in this pond,	-	-	-	-	-	-	100
7th Dam. At *Varner's falls:* rocky on the south side, common bank on the north,	—65	170	2.20	1.70	5.20	-	900
Lock on the north side, in 2 1-2 feet depth, raised 0.80,	-	-	-	-	-	5.00	3,700
8th Dam. At *Lackey's falls:* rocky on the south, alluvial on the north side. This dam will raise the water 0.75 at *Rocky-point mill:* the wheel is 7.40 feet above James river; the mill is turned by a bold run,	1—25	161	4.85	4.10	5.50	-	2,320
Lock on the south side above the dam, in 3 feet depth, raised 0.43,	-	-	-	-	-	5.20	3,900

9th Dam.	At *Rocky-point falls:* rocky on the north side, low grounds on the south,	1—00	78	4.90	3.90	5.70	-	1,300
	Lock on the south side, in 2 1-2 feet depth, raised 0.72,	-	-	-	-	-	5.50	3,970
10th Dam.	At *Kinney's falls:* common banks on both sides,	1—10	99	7.00	5.00	5.60	-	2,650
	Lock on the south side, in 3 1-2 feet depth,	-	-	-	-	-	5.30	4,000
	Blasting in this pond,	-	-	-	-	-	-	10
11th Dam.	At a ledge, a quarter of a mile below *Mitchell's gulph:* cliff on the south side, alluvial bank on the north,	0—45	110	6.30	5.30	6.50	-	2,240
	Lock on the south side, in 2 1-4 feet depth, raised 1 foot from below,	-	-	-	-	-	6.40	4,280
	Blasting in this pond,	-	-	-	-	-	-	490
12th Dam. *	At a ledge a little above *Mitchell's gulph:* cliff on the north, common bank on the south side,	1—15	130	5.60	4.60	5.20	-	2,520
	Lock on the south side, 25 feet away from the shore,	-	-	-	-	-	4.90	3,830
13th Dam. †	A little above the *Hollow ford,* and a quarter of a mile below *Shepherd's Island falls:* rocky on the north, alluvial on the south side,	1—15	132	12.30	10.30	9.80	-	5,800
	Lock on the north side, in 2 feet depth, raised 1 foot,	-	-	-	-	-	9.60	5,450
	Removing gravel at the head of the falls, and forming wings,	-	-	-	-	-	-	50
14th Dam.	At *Smith's fish-trap,* a quarter of a mile above Shepherd's island: rocky on the south side, alluvial on the north,	1—40	146	7.60	6.10	6.30	-	3,580
	Amounts carried over,	18—24	-	-	-	89.13	-	96,480

---

* A canal on the south side might be made, but would be more expensive. If it should be deemed advisable, I should prefer to begin it from the dam next above, whereby 21.50 feet would be overcome, and the water power increased: This canal would be 1 3-4 mile long; the ground is good all the way.

† This dam is unavoidably high: This place was noticed in my report of 1826, as one of the worst on the whole river; however desirable, it would be almost impossible to turn Shepherd's Island falls by a canal. On the south side, drift timber and gravel are accumulated in immense heaps, so that the mouth of a canal would be chocked if opened below *Jenning's creek,* while the necessity of crossing this stream precludes the idea of beginning the canal above it.

On the north side, the current bears against cliffs, along which a canal could not be raised without great expense. The power of the current in this bend, and the absence of a favorable intermediate site, require that the whole fall should be overcome by a single dam, located some distance below.

	Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of Dams.		Lifts		Cost.
			Above bottom.	*Above surface.*	*Of Dams.*	*Of Locks.*	
	miles. chs.	*yards.*	*feet.*	*feet.*	*feet.*	*feet.*	*Dollars.*
Amounts brought over,	18—24	-	-	-	89.13	-	96,480
Lock on the north side, in 0.50 foot depth, raised .50: gravelly bottom, about 2 feet deep,	-	-	-	-	-	6.00	4,330
15th Dam. At *Bilbro's fish-trap*: cliff on the south side, common bank on the north. This dam reaches half way up the *Race-path*,	1—10	143	5.00	5.00	4.90	-	2,160
Lock on the south side, in 2 feet depth, raised 1 foot,	-	-	-	-	-	4.70	3,770
16th Dam. Half way up the *Race-path*: common banks on both sides,	—55	143	7.00	4.50	5.00	-	3,540
Lock on the north side, in 2 feet depth, and 10 yards away from the bank,	-	-	-	-	-	4.80	3,870
17th Dam. At the foot of *Hamilton's falls*: rocky on the south side, common bank on the north,	1—55	143	7.20	7.20	7.20	-	3,310
Lock on the south side, in 6 inches depth, raised 0.64 foot, requiring excavation of rock,	-	-	-	-	-	6.90	4,640
Excavation of gravel,	-	-	-	-	-	-	40
This pond reaches 1-2 mile above *Pattonsburg*: it raises the water only a few inches at the bridge, and also at the mouth of *Purgatory creek*: The wheel of the mill on this creek, is 6 feet above the level of James river at its mouth.							
Amounts up to *Pattonsburg*,	21—64	-	-	-	106.23	-	122,140
18th Dam. At the foot of *Buchanan shoals*, half a mile above Pattonsburg: high banks on both sides. This pond reaches to the top of *Mill shoals*,	—50	132	8.60	7.10	7.50	-	4,280

	Lock on the north side, in 2 feet depth, requiring the balance to be blasted out,	-	-	-	-	-	7.30	4,730
19*th Dam.*	At the head of *Mill shoals:* high banks on both sides. This pond will cover *Holmes's shoals*, and raise the water 0.50 foot at *Beale's bridge*, and 2 feet at the mouth of *Looney's creek*, where the sluice improvements, made by the James River Company, end,	2—45	132	6.60	5.10	5.40	-	3,080
	Lock on the north side, in 2 feet depth, to which 0.50 foot is added,	-	-	-	-	-	4.90	3,890
20*th Dam.*	A quarter of a mile below *Penn's falls:* high banks on both sides,*	—45	86	4.50	6.50	4.80	-	1,510
	Lock on the south side above the dam, in 3 1-2 feet depth,	-	-	-	-	-	4.70	3,740
21*st Dam.*	Half way up *Penn's falls:* cliff on the south side, common bank on the north. This pond will cover *Cobb's fish-dam*,	2—05	88	6.50	4.50	5.20	-	1,930
	Lock on the south side, in 2 feet depth, requiring blasting for the balance,	-	-	-	-	-	4.80	3,960
22*d Dam.*	At the foot of *Leip's falls:* cliff on the south side, common bank on the north,	†—25	110	9.80	8.30	7.80	-	4,990
	Lock on the south side, in 3 feet depth, raised 0.72,	-	-	-	-	-	7.80	4,840
	At 25 chains above this dam, is lower end of a short canal and tunnel across *Ritchie's neck.*							
	CANAL AND TUNNEL.							
	Three locks, with two intermediate basins, 330 yards long each, and short canal,	—42.85	-	-	-	23.40	-	24,300
	Deep cutting at both ends through rock,	— 2.00	-	-	-	-	-	1,900
	Tunnel all through rock,	— 7.58	-	-	-	-	-	8,300
	Amounts carried over,	28—46.43	-	-	-	160.33	-	193,590

---

* At *Penn's falls*, the turn is so short, that the approach to the lock would be difficult in swells; on this account, the site some distance below in the pond, is preferred, though otherwise less advantageous.

† This pond extends actually about a mile up, but only the distance navigated between the dam and the lower end of the canal is here set down.

			ts of Dams.				
	ponds.	Length dam, e of abu	Above bottom.	Above surface.	Of Dams.	Of Locks.	
	miles. chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
Amounts brought over,	28—46.43	-	-	-	160.33	-	193,590
Guard gates,	-	-	-	-	-	-	700
The distance across is consequently 52.43 chains, while round it is 3 miles 42.43 chains, shewing a saving of distance of very nearly 3 miles. This advantage, together with the greater permanency of the plan, and the acquisition of a most excellent site for the application of a water power of nearly 24 feet, are ample compensations for a slight increase of expense.* The water power, if desired, might even be made 7.80 feet greater; that is, 31.20 feet, by carrying the canal down to below the last dam site at *Leip's falls*.							
23d *Dam*. At the head of *Buzzard's shoals*: good firm banks on both sides. This dam will throw a pond over *Dobb's fish-trap*: as it is intended to turn the water into the tunnel, it requires no lock. Only the length of the pond, and its fall above the tunnel, are here set down. (The actual length of the pond, from the dam to its head, will be 2 miles 25 chains,)	1—62.57	99	7.50	6.50	.50	-	2,530
24*th Dam*. At the head of *Kyle's shoals*: rocky on the north, alluvial on the south side. This pond will cover the *Grassy Island shoals*,	2—35	132	7.70	6.70	7.60	-	3,350
Lock on the south side, in 1 1-2 foot depth, to which is added from below 1.50,	-	-	-	-	-	7.10	4,560
25*th Dam*. At the foot of the *Cushaw falls*: cliff on the south side, solid bank on the north. A fish-dam in this pond must be demolished,	—60	66	8.50	6.50	6.40	-	1,610

Look on either side, in 3 feet depth, raised from below, 0.60,	-	-	-	-	-	6.20	4,230
26th Dam. † Below the *Brick-yard falls:* rocky bank on the north side, common bank on the south,	1—30	66	9.40	7.90	8.20	-	2,340
Look on either side, in 3 feet depth, to which 0.30 is added from below,	-	-	-	-	-	7.90	4,850
27th Dam. ‡ Just below *Mallery's falls*, and one-third of a mile below the mouth of the *Catawba:* cliff on the north side, common bank on the south. This dam will raise the water 5.50 feet at the mouth of the *Catawba*,	1—55	88	9.50	7.60	9.30	-	3,060
Look on the north side, in 2 feet depth,	-	-	-	-	-	8.90	5,220
28th Dam. At *Merton's fall:* rock on the north side, common bank on the south,	—70	99	6.10	4.60	5.10	-	1,980
Look on the north side above the dam, in 2 feet depth, raised 1.30.	-	-	-	-	-	4.90	3,850
29th Dam. Among *Peal's Island falls*, and a little below the island: south side cliff, north side earth. This dam will raise the water only nine inches along the island,	—65	66	7.50	6.00	6.00	-	1,790
Lock on either side, in 1.50 foot depth, raised 0.50,	-	-	-	-	-	5.80	4,360
Excavation of the channel at the head of the island,	-	-	-	-	-	-	160
30th Dam. Some distance below *Dysher's fish-trap:* rock on the south, low grounds on the north side. This pond will cover *Dysher's falls*, and extend through the gap of the North mountain, up to a little above the mouth of *Craig's creek*. where the water will be raised 0.80 foot,	2—00	73	9.60	7.60	7.80	-	2,640
Lock in the pond on the north side, in three feet depth, raised 0.50,	-	-	-	-	-	7.40	4,880
Excavation in the pond,	-	-	-	-	-	-	80
Amounts carried over,	40—24.00	-	-	-	211.23	-	245,720

---

* The difference of expense between the dams and locks round the bend and the tunnel across, is estimated at about $6,000.

† The difficulty of erecting an intermediate dam up these falls, necessitates the height of dam here assumed.

‡ The same remark as in the preceding note, applies here.

		Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of dams.		Lifts		Cost.
				Above bottom.	Above surface.	Of Dams.	Of Locks.	
		miles. chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
	Amounts brought over,	40—24	-	-	-	211.23	-	245,790
31st *Dam.*	At the foot of *Sheetz's falls*, a little above the mouth of *Craig's creek:* good high banks on both sides. This pond will cover Beal's shoals,	1—10	83	7.30	6.30	6.00	-	2,450
	Lock on the north side, in 2 1-2 feet water, raised 0.80,	-	-	-	-	-	5.80	4,260
32d *Dam.*	At *Baker's falls:* low grounds on both sides,	55	85	6.20	5.20	5.70	-	2,060
	Lock on the north side, in 1 1-2 foot depth, not raised, requiring excavation of the chamber,	-	-	-	-	-	5.50	4,160
33d *Dam.*	At the foot of a fall: low grounds on both sides,	1—25	86	7.70	6.70	5.80	-	2,670
	Lock on the north side, in 1 1-2 foot depth, raised 1.50,	-	-	-	-	-	5.50	4,110
34th *Dam.*	Near the foot of *Shirky's falls:* good high banks on both sides. The level of this pond is that of Shirky's mill-pond,	1—10	77	5.80	5.30	6.90	-	1,800
	Lock on the north side, in 1 1-2 foot depth,	-	-	-	-	-	6.70	4,410
35th *Dam.*	At the head of *Shirky's pond:* common banks on both sides,	1—20	83	5.90	4.10	4.70	-	1,930
	Lock on the north side, in 2 feet depth; the balance to be obtained by removing gravel,	-	-	-	-	-	4.40	3,810
	Blasting at the head of this pond,	-	-	-	-	-	-	60
36th *Dam.*	At the foot of *Poague's shoals:* rocky on the south, alluvial on the north side,	—30	88	5.20	4.70	4.20	-	1,530
	Lock in the pond, in 3 feet depth, raised 0.85,	-	-	-	-	-	4.10	3,350
37th *Dam.*	Among *Poague's shoals:* high banks on both sides,	1—15	88	6.80	5.80	5.80	-	2,360
	Lock on either side, in 6 inches depth, raised 0.60,	-	-	-	-	-	5.50	4,050
38th *Dam.*	At the base of *Wammuck's shoals:* good banks on both sides. This pond will reach a little above the head of *Wood's island*, and raise the water there 2 1-2 feet,	1—15	88	6.90	5.90	6.50	-	2,390

	Lock on the north side, in 1 foot depth; the balance gravel to be removed,	-	-	-	-	-	6.20	4,350
39th Dam.	Across the south channel at *Wood's island:* rocky on the south side, high island on the north	—35	32	7.60	5.10	5.50	-	1,060
	Lock on the south side, in 1 foot depth, requiring gravel to be excavated for foundation,	-	-	-	-	-	5.40	4,190
	Excavation of gravel in this pond,	-	-	-	-	-	-	300
40th Dam.	Across the same south channel: same shores as the preceding,	2—45	35	7.70	6.20	7.00	-	1,150
	Lock on the south side, in 1 foot depth; the balance obtained by blasting,	-	-	-	-	-	6.50	4,130
	A dam across the head of the north channel: cliff on the north, island on the south side,	-	35	5.00	3.50	-	-	680
	Excavation of gravel and fish-dams in this pond,	-	-	-	-	-	-	90
41st Dam.	Cliff on the north side, common bank on the south,	—25	77	8.40	6.40	6.10	-	2,590
	Look on the north side, in 2 feet depth, raised 0.70,	-	-	-	-	-	6.00	4,180
42d Dam.	Cliff on the north, common bank on the south side. This dam will raise the water to the level of the pond above *Pitzer's mill dam*, through which an opening must be made,	1—25	75	6.50	5.50	4.90	-	1,630
	Lock on the south side, in 1 foot depth, raised 1.20,	-	-	-	-	-	4.60	3,500
43d Dam.	Just above the *Alum rock*, and the foot of the falls of the same name: cliff on the south side, low grounds on the north,	1—30	97	7.10	6.60	7.70	-	2,310
	Lock on the south side, in 1 foot depth, raised 0.70, requiring the chamber to be deepened by blasting, and a short channel to be opened,	-	-	-	-	-	7.40	4,280
	Amounts carried over,	54—44	-	-	-	288.03	-	325,490

---

* In this pond, within a short distance of each other, are *Sinking creek* and *Long's entry run*. At the mouth of the latter, is Shirky's mill-dam, the situation of which did not appear favorable for the purpose of improving the navigation; for this reason, and because the site now covered by this low and rough dam could not be examined, I have assumed the plan best adapted to the localities observed, and raised the water to the level of the mill-pond by a dam a little distance below at an eligible site. In all cases Shirky's dam must be taken up. If then the foundation is found good, the existence of the mill may advise the use of this site; otherwise, the mill must be removed to the site of the new dam, where it will have the advantage of a much greater head of water than it now has.

	Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of Dams.		Lifts		Cost.
			Above bottom.	*Above surface.*	*Of Dams.*	*Of Locks.*	
	miles. chs.	*yards.*	*feet.*	*feet.*	*feet.*	*feet.*	*Dollars.*
Amounts brought over,	54—44	-	-	-	288.03	-	325,490
44th Dam. Half a mile below the mouth of the *Cow Pasture river*: cliff on the north side, low grounds on the south. The dam will raise the water 5 feet at the mouth of this river, and form a pond some distance up it,	—70	88	6.60	5.60	7.30	-	1,960
Look on the south side, in 1 foot depth, raised 2.10 feet,	-	-	-	-	-	7.10	4,490
Amounts up to the *Cow Pasture river*,	55—34	-	-	-	295.33	-	331,940
JACKSON'S RIVER.							
45th Dam. At the foot of *Jordan's falls*: rocky on the south side, alluvial on the other,	—30	62	5.60	6.10	4.90	-	1,250
Look on the south side, in 1 foot depth, to which is added from below 1.30,	-	-	-	-	-	4.10	3,240
Blasting in this pond,	-	-	-	-	-	-	80
46th Dam. Among the above named falls: common banks on both sides,	—30	75	7.00	5.50	5.90	-	2,170
Look on the north side, in 1 foot depth, not raised; the chamber to be blasted out,	-	-	-	-	-	5.80	3,660
47th Dam. A little below *Kayser's falls*: cliff on the north side, bottoms on the south,	—35	75	5.70	6.20	6.00	-	1,480
Look on the north side, in 3 feet depth, raised 0.60,	-	-	-	-	-	5.90	4,120
48th Dam. Among *Kayser's falls*: cliff on the north side, common bank on the south,	—55	75	8.00	6.60	7.10	-	2,140
Look on the north side, in 1 foot of water, requiring the depth to be obtained by blasting,	-	-	-	-	-	6.90	3,610

This dam will raise the water 2 feet over the natural pool into which the short canal through the gap of the *Rich-patch mountain* will look down.

CANAL THROUGH THE RICH-PATCH MOUNTAIN.

Col. J. Jordan was constructing a canal upon the same ground, when the survey passed through this gap: before the completion of this canal, I could not determine how far it might subserve the improvement of the navigation; I have, therefore, presented here the plan which I deemed cheapest and most eligible to pass through this gap, without any reference to Col. Jordan's canal. I am of opinion, however, that it will be advisable to so modify the location, as to make use of it, if, upon examination, its construction be found such as to suit the intended mode of navigation.

For excavation of the canal, puddling and paving,	0—18.50	-	-	-	12.10	-	3,800
Guard lock, answering also as a lift lock,	-	-	-	-	-	3.00	7,000
Lift lock,	-	-	-	-	-	9.10	7,000
49th *Dam*. At the head of the canal, opposite a remarkable natural wall called the *Dam rock*, just in the gap: rocky on both sides. This dam being intended to turn the water into the canal, requires no lock: only the length and fall of the pond above the dam is carried out here,	—51.50	77	5.90	4.70	0.20	-	1,040
50th *Dam*. At the *Red Bank falls*: good rocky shores on both sides,*	—35	80	6.60	7.90	7.60	-	1,200
Lock on the north side, in 3 1-4 feet depth,	-	-	-	-	-	7.50	4,600
Amounts carried over,	58—40.00	-	-	-	338.43	-	378,390

---

* This dam will overflow the *Gap ford*, which is now very important, the present road to *Covington* crossing the river at this place: It is probable, however, that an improved road would continue on the south side as far as the *Island fording* At any rate, it would be extremely difficult to preserve this ford; and the additional expense that would be requisite therefor, would by far exceed that of a bridge, and would not be so usefully appropriated. This remark applies to all the fords: and it is probable, that when the navigation is improved, two or three bridges may be deemed proper to substitute the main fords in the upper part of James, and on Jackson river: They will cost but little, and may be considered as part of the sum allowed for contingencies.

	Distances and lengths of the ponds.	Length of each dam, exclusive of abutments.	Heights of Dams.		Lifts		Cost.
			Above bottom.	Above surface.	Of Dams.	Of Locks.	
	miles. chs.	yards.	feet.	feet.	feet.	feet.	Dollars.
Amounts brought over,	58—49	-	-	-	338.43	-	378,390
51st *Dam.* A quarter of a mile above the *Gap ford*: rocky on the south side, high bank on the north. This pond will be 5 1-2 feet high at the mouth of *Mill creek*,	1—15	55	8.00	6.60	7.10	-	1,670
Lock on the south side, in 1 foot depth, raised 1 foot,	-	-	-	-	-	6.90	4,160
Blasting in this pond,	-	-	-	-	-	-	50
52d *Dam.* About the middle of a fall: rocky on the north side, alluvial on the south,	—35	60	5.90	5.90	6.30	-	1,290
Lock on the south side, in 2 feet water, requiring the chamber to be deepened by blasting,	-	-	-	-	-	6.20	4,290
53d *Dam.* A little below *Haynes's falls*, and above a small mill: cliff on the north, low grounds on the south side. This pond will contain *Haynes's island*, which is of no value, and raise the water 2 1-4 feet along it,	—35	88	6.90	6.40	7.10	-	2,060
Lock on the north side, in 2 1-2 feet depth. raised 1 foot,	-	-	-	-	-	7.00	4,470
54th *Dam.* Near the head of *Haynes's island*: firm banks on both sides,	—65	90	8.20	7.80	7.10	-	2,320
Lock on the south side, in 0.75 depth, raised 2 feet,	-	-	-	-	-	6.90	4,390
55th *Dam.* Common banks on both sides,	—60	66	6.40	4.90	4.30	-	1,880
Lock on the north side, in 1 1-2 foot depth, raised 1.10,	-	-	-	-	-	4.10	3,680
56th *Dam.* At the foot of a great fall: cliff on the north side, common bank on the other,	—40	55	8.00	6.00	5.10	-	1,290
Lock on the north side, in 2 feet depth, raised 1.30,	-	-	-	-	-	5 00	3,970
57th *Dam.* Cliff on the south side, good bank on the north,	—40	55	6.50	5.50	4.40	-	1,330
Lock on the south side, in 1.50 foot depth, raised 1.50,	-	-	-	-	-	4.30	3,720
58th *Dam.* At the foot of the *Alum Rock falls*: common banks on both sides,	—30	77	7.50	5.50	4.40	-	2,400
Lock on north side, in 2 feet depth, raised 1.50,	-	-	-	-	-	4.30	3,760

59th Dam. A little above the lower end of the *Alum rock:* cliff on the south, low grounds on the north side,	1—10	66	6.30	5.30	5.80	-	1,480
This dam will raise the water 2 1-2 feet at the head, and 5 1-2 feet at the lower end of the *Alum rock*, along which the Covington road has been raised by a wall about 3 feet high. This road will be covered in part by the pond; it should be raised above the pond by embankment; if made 15 feet wide, it will cost	-	-	-	-	-	-	450
Lock on the south side, in 3 1-2 feet depth,	-	-	-	-	-	5.60	4,060
60th Dam. At the foot of *Cairnes's falls:* cliff on the north side, common bank on the south.	—45	77	8.70	7.70	7.20	-	2,160
Lock on the north side, in 1 foot depth. raised 0.90; the balance to be excavated out of a slaty bottom,	-	-	-	-	-	7.10	4,850
61st Dam. Among the same falls: cliff on the north side, common bank on the south. This dam will raise the water 2 1-4 feet at the head of the falls, and over a long natural pond just above,	1—05	88	8.20	7.70	7.70	-	2,540
Lock on the north side, in 1 foot depth, raised 0.50; the balance to be excavated as above,	-	-	-	-	-	7.50	4,940
62d Dam. At a ledge opposite *Hernsberger's:* low grounds on both sides,	—52	61	7.00	4.90	6.10	-	1,950
Lock on the south side, in 2 feet depth, raised 1.30,	-	-	-	-	-	6.00	4,200
SHORT CANAL.							
The head of this pond is at the lower end of a short canal, which after revision of the notes, and a comparison with those of the survey of the marginal ground, formerly made for a lateral canal, was thought preferable to a							
Amounts carried over,	67—01	-	-	-	411.03	-	451,690

---

† The head of these falls presents great difficulties for any kind of improvement, as noticed in the report of 1826, page 368: A low dam near the head of it would be liable to many objections; it is, therefore, thought indispensable to overcome this fall by dams of the heights here stated, which fall on much better sites.

			Ab bott		Of Dams.	Locks.	Cost.
	miles. cha	yards.	feet.	feet.	feet.	feet.	Dollars.
Amounts brought over,	67—01	-	-	-	411.03	-	451,690
succession of locks and dams, the fall in the river being great, and the sites for dams not favorable, whereas the ground for a canal is very good all the way.							
For excavation of the canal, paving, guard-gates,	1—35	-	-	-	25.00	-	8,850
For 3 locks of 25 feet lift together,	-	-	-	-	-	25.00	17,800
63d Dam. A little below the *Cave rock:* rocky on the south side, alluvial on the north. This dam turns the water into the canal, and requires no lock, its lift is included in the lockage of the canal, and only the length of the pond above this is carried out here,	—38	73	7.50	5.50	-	-	2,210
64th Dam. Above the *Cave rock:* cliff on both sides,	—35	88	5.00	5.00	5.20	-	970
Lock on either side, in 2 feet depth, raised 1.40,	-	-	-	-	-	5.10	3,870
Rock to be removed out of this pond,	-	-	-	-	-	-	50
65th Dam. A little below the *Island fording:* cliff on the north side, low gravelly beach for some distance on the south,	—70	79	5.60	5.60	6.10	-	1,510
Lock on the north side, in 1 1-2 foot depth; the chamber to be deepened by blasting,	-	-	-	-	-	5.90	3,990
66th Dam. Cliff on the south, common bank on the north side,	—30	59	7.50	6.90	6.00	-	1,640
Lock on the south side in 1 1-2 foot water, raised 1.30,	-	-	-	-	-	5.90	4,240
67th Dam. Cliff on the south, common bank on the north side,	—40	60	7.80	5.80	6.20	-	1,490
Lock on the south side, in 1 1-2 foot depth,	-	-	-	-	-	6.10	4,090
68th Dam. At the cliff a quarter of a mile below the Pounding-mill run: cliff on the north side, common bank on the south,	—70	60	8.40	5.40	5.40	-	1,890
Lock on the north side, in 1 foot depth, raised 0.50; the balance to be obtained by blasting, as well as a channel 30 yards long below the lock,	-	-	-	-	-	5.20	4,030

69th Dam.	A little below *Mallory's*: cliff on the south, alluvial bank on the north side,	—35	62	4.70	3.70	4.80	-	1,070
	Lock on the south side, in 2 1-2 feet depth,	-	-	-	-	-	4.70	3,770
70th Dam.	Some distance below the *Alum rock* cliff on the south, alluvial bank on the north side,	1—10	62	7.70	8.70	7.90	-	1,750
	Lock on the south side, in 1 foot depth, raised 2 feet,	-	-	-	-	-	7.00	4,400
71st Dam.	At the head of the *Alum rock cliffs*, which are on the north side alluvial bank on the south,	—45	60	7.50	6.80	5.80	-	1,660
	Lock on the north side, in 1 1-2 foot depth, raised 2.10,	-	-	-	-	-	5.70	4,140
	For removing a fish-dam, and gravel accumulated,	-	-	-	-	-	-	50
72d Dam.	Banks, 13 feet high,	—60	55	4.80	3.30	3.00	-	1,940
	Lock on either side, in 1 1-2 foot depth, raised 0.80 foot,	-	-	-	-	-	-	3,270
73d Dam.	One-third of a mile below *Pott's creek*: cliff on the north side, bank alluvial on the south. This dam will raise the water 4 feet at the mouth of the creek,	—66	59	9.40	7.90	6.70	-	2,230
	Lock on the north side on a dry ledge, over which the water is raised .70 foot,	-	-	-	-	-	6.50	3,800
74th Dam.	Half a mile above *Pott's creek*: good bank on the north side, low one on the south,	—75	60	5.90	6.90	4.60	-	1,940
	Lock on the south side, in 1 foot depth, raised 1.10,	-	-	-	-	-	4.40	3,900
75th Dam.	Cliff on the north side, bottoms on the south,	—70	53	7.00	6.50	7.00	-	1,400
	Lock on the north side, in a depth of 6 inches, to which 2 feet are added from below,	-	-	-	-	-	6.80	4,130
76th Dam.	Low grounds on both sides,	—55	61	5.90	7.40	4.80	-	1,580
	Lock on the south side, in 1 1-2 foot depth, raised 2 feet,	-	-	-	-	-	4.70	3,790
77th Dam.	Low grounds on the south side, rocky bank on the north,	—30	61	7.00	6.00	4.40	-	1,560
	Lock on the north side, in 1 foot depth, raised 2 feet,	-	-	-	-	-	4.30	3,490
78th Dam.	Cliff on the south side, alluvial bank on the north,	—65	78	9.00	7.60	5.70	-	2,570
	Lock on the south side, in 1 foot depth, raised 1.80,	-	-	-	-	-	5.90	4,040
79th Dam, and last.	At the lower end of *Covington*: bottoms on both sides. This dam will raise the water exactly 3 feet at the							
	Amounts carried over,	79—90	-	-	-	518.93	-	563,100

	Distances and lengths of the ponds.	*Length of each dam, exclusive of abutments.*	*Heights of dams.*		*Lifts*		*Cost.*
			Above bottom.	*Above surface.*	*Of Dams.*	*Of Locks.*	
	miles. chs.	*yards.*	*feet.*	*feet.*	*feet.*	*feet.*	*Dollars.*
Amounts brought over,	79—29	-	-	-	518.93	-	563,160
mouth of *Dunlap's creek*. Its site is about the same as that on which a bridge must ultimately be erected: Both works might be combined, by incorporating the base of the piers in the body of the dam. The length of the pond here set down, is only up to the mouth of Dunlap's creek,	—30	75	8.50	7.50	5.90	-	2,730
Lock on the south side, in 1 foot depth, raised 2 feet,	-	-	-	-	-	5.80	4,080
Total amounts up to *Covington*, at the mouth of *Dunlap's creek*,	79—59*	-	-	-	524.83	-	569,970

---

* The distance following the river, is 82 miles 49 chains, there being a distance of 2 miles 70 chains saved by the tunnel.

RECAPITULATION

Of the Estimate of the improvement of James River; including the length and lift of the sections already completed.

	Distances.	Lifts.	Cost.	Cost, with 10 per cent. for contingencies, superintendence, &c.	Which is	
					per mile.	per foot lift.
	miles. chs.	feet.	Dollars.	Dollars.	Dollars.	Dollars.
From tide-water to Maiden's Adventure, the canal is completed; but the series of connected locks, from the Basin to the Dock, are in bad order: They should be re-placed by more permanent locks, better suited to an active intercourse,	29—00	140.50	Completed.			
From the dam at Maiden's Adventure, to Columbia, locks and dams,*	30—07	39.28	70,340	77,370	2,572	1,970
From Columbia to Big Bremo, do.	11—00	29.22	32,830	36,110	3,283	1,236
From Big Bremo to Hardware river, the Seven Islands falls, canal,	3—37	33.27	109,424	120,370	34,754	3,618
From Hardware river to Scottsville, locks and dams,	8—00	15.11	42,700	46,970	5,332	3,109
From Scottsville to Warminster, do.	19—10	58.37	94 810	104,290	5,453	1,787
From Warminster to Lynchburg, do.	50—03	185.88	253,660	279,030	5,577	1,501
From Lynchburg to the Blue Ridge canal, do.	20—15	103.47	117,220	128,940	6,387	1,246
Canal through the Blue Ridge, On the south side of the river,	2—15	† 34.75	Completed.			
On the north side,	4—45	60.00	ditto			
From the head of the canal to Pattonsburg, locks and dams,	21—64	106.23	122,140	134,350	6,163	1,265
From Pattonsburg to the Cow Pasture, do.	33—50	189.10	209,800	230,780	6,863	1,220
(In this section, there is purposed a tunnel 167 yards long, which will save very nearly three miles.)						
From the Cow Pasture to Covington, (Jackson's river,) locks and dams,	24—25	229.50	238,030	261,830	10,769	1,100
This section includes two short canals: one of them, 18½ chains long, through the Rich-patch gap; the other, 1 mile and 35 chains long, below the Cave rock.						
Total amounts,	257—31‡	1224.68	1,290,954	1,420,040		

---

* The distances and lifts here stated, are not exactly to the points named; but to the heads of the ponds raised opposite such places.

† The lift of this section is now 36 feet, but will be reduced to 34.75, when the improvement here recommended is executed.

‡ 2 miles 70 chains, which are saved by the tunnel, should be added to this, which make the whole distance following the river, 260 1-4 miles: in like manner, the last pond raising the water 3 feet at the mouth of Dunlap's creek, this number deducted from the whole lift, leaves 1221.68 for the fall between Covington and tide-water.

LETTERS REFERRED TO IN

MR. CROZET'S REPORT.

SIR,

Having understood that you wished to ascertain the cost of steam engines suitable for propelling boats on the plan of lock and dam navigation, I have waited until you should have opportunity to obtain such information from northern cities, because, while I should hope that a preference would be given to a manufacturer here, who would be responsible for performance on equal terms, I should prefer that any proposal from me should be compared with the terms of others, that there might not remain a suspicion of more being expected for such work here, than it would cost if obtained elsewhere.

I have a list of prices for steam engines at Glasgow in Scotland, where they are made, I believe, on as low terms as in any part of Great Britain: For a portable engine of six horse power, the stated price is £340 sterling, and for one of ten horse power, £500 sterling: They might probably be had now for £50 to £70 less. It is not pretended. that engines can be made in this country at same prices as in Great Britain; but it is believed, that when the charges of importation are added, they may be made here for the sum they would thus cost. But those engines are of the kind denominated *low pressure*, and there can be little doubt that for tow-boats, especially small boats and in fresh water, *high pressure* engines are much to be preferred; being of less bulk and weight; less expense in original cost and operation; more simple and easier kept in order: neither is there, under proper precautions, any danger to be apprehended, but what may result from the carelessness or daring of the engineer, and where there are no passengers exposed, there can be little objection that *he* should be left to abide the known consequences of his own misconduct.

A six horse engine would probably be of sufficient power for a boat, to tow two others, each with twenty tons loading, at the rate of three miles per hour. The tow-boat, with a good supply of fuel, would draw least water of the three. An engine of that power, well adapted to the purpose, would, with boiler, cost twelve hundred dollars. The furnace and boiler would require to be strongly secured, to resist the effects of the severe thumps to which the boat would be subject in the locks, and this, together with the paddle-wheel (at the stern,) might cost about two hundred dollars more. The power of the engine would be calculated at fifty pounds pressure of steam to the inch, which is the practice in manufactories where these engines are commonly used, as also for locomotive engines on rail-ways in Great Britain; but the engine and boiler should be made and proved capable of resisting 200 pounds to the inch, and it might then be safely operated at 100 pounds to the inch, which would more than double the power, since the friction would remain the same. I believe it capable of proof, that high pressure engines are often worked at 150 pounds pressure to the inch, and for a long time without accident; but this is rather an illegitimate use. This kind of engine is the most common on the Mississippi and Ohio rivers.

I would contract to build an engine on the terms above specified, and set it up in a boat to be provided, with warrantee for good performance. The boat need not be more than fifty feet long and ten feet wide An engine of ten horse power would cost but $400 to $500 more, the additional expense being chiefly in the increased weight of engine and size of boiler; and in that case the boat should be full 60 feet long and 12 feet wide, and would be competent to tow two boats with thirty tons of loading in each, at rate of three to four miles per hour.

I am, very respectfully, &c.

D. I. BURR.

Richmond Foundry, 4*th Jan.* 1828.

To C. Crozet, Esquire.

New York, 3d January, 1828.

Dear Sir,

Mr. Carson begs me to apologize for not replying to your letter of 19th November, earlier, and as it may not be too late, I hand you the following estimates:

The cost of engines will be as follows, viz:

5 horses power, low pressure, with iron boiler,
$ 1,600: Weight about 9 tons.

10 horses power, low pressure, with iron boiler,
$ 2,600: Weight 17 tons.

15 horses power, low pressure, with iron boiler,
$ 3,500: Weight 24 tons.

20 horses power, low pressure, with iron boiler,
$ 4,500: Weight 30 tons.

The English estimate of fuel is 14 pounds per horse power, per hour: this is for the best New Castle coal, and for land engines: 20 pounds of Virginia coal per horse power, per hour, will be not far from the truth.

The cost of boats will be about $ 40 per ton, carpenter's measurement; and the draft of water must be regulated by the build of the boat.

The wear and tear of the engine will depend upon the care bestowed by the Engineer: so much so, that an estimate can scarcely be made with any accuracy: with good work, carefully put up, and well taken care of, it is very trifling. We have known a boat to run a season with less than $ 100 repairs: but this item is generally much greater.

An iron boiler will last in fresh water, seven years; in salt, three to four years.

Should the above not be sufficiently in detail, we will readily furnish any other information in our power.

I am, dear Sir,
Your's respecfully,
Wm. KEMBLE.

Mr. C. Crozet, *Principal Engineer of the State of Virginia.*

REPORT

ON THE SURVEY OF THE

NORTH ANNA RIVER.

The survey of this river began on the 27th of April, at Brockman's or Brock's bridge, on the south fork, which is the point designated by the act of the 6th of February, 1826. The following is an exhibit of the principal results of the measurement.

Fall and distance from Brock's bridge to each of the most remarkable points on the river.

	Fall in ft.	*Distances in miles and 4 pol. chains.*
To the head of Ellis's mill pond,	1.32	0—45
To the beginning of the mill race,		1—32
To the end of the same,	1.46	2—06
To the lower point of the wheel,	9.36	
To the water under the wheel,	10.18	
To the mouth of Hickory creek,	10.77	2—17
To Minor's bridge,	22.80	5—50
To Gold Mine creek,	27.14	6—55
To opposite the Mineral spring,	30.51	7—76
To the head of Hart's mill pond,	32.20	8—30
To the foot of the dam,	40.12	10—65
To the lock site,	41.48	10—71
To Nelson's bridge,		11—00
To the junction of the North and South forks, which is also the head of Jirdone's mill pond,	53.02	15—24
To the base of the dam,	63.01	18—26
To the out-fall of the proposed locks,	64.02	18—32
To Tyler's mill pond,	66.86	19—67
To Carr's bridge,		22—12

	Fall in ft.	*Distances in miles and 4 pol. chains.*
To the lower point of Tyler's mill wheel,	76.42	25—24
To the water under Tyler's mill wheel,	77.23	
To Dabney's pond, (said to be 9 inches lower than usual,)	78.70	27—05
To the foot of the dam,	87.10	30—49
To Anderson's mill pond,	94.50	32—19
To the foot of the dam,	104.05	36—65
To Redd's mill pond,	110.59	41—70
To the foot of the dam,	120.03	44—24
To M'Laughlin's pond,	137.39	46—38
To the foot of the dam,	146.46	48—44
To Madison's upper mill pond,	149.82	48—75
To the dam,	149.92	49—60
To Quarles' mill pond,	161.49	49—76
To the foot of the dam,	169.33	50—00
To Terrell's mill pond,	173.65	50—11
To the base of the dam, or Madison's lower mill pond,	181.51	50—67
To the lower point of the wheel at Madison's lower mill,	195.24	51—34
To Cook's ford,	201.66	51—61
To Fall Point,	215.51	58—10
To the mouth of the South Anna,	217.50	64—30

N. B. From Fall Point to the mouth of the South Anna, the water is good, and only obstructed by some timber. It was, therefore, not deemed necessary to level any farther than Fall Point. The fall here stated for this distance, was merely estimated by the eye.

The width of the river averages from Brock's bridge to Ellis's mill,	28 feet.
At the mouth of Hickory creek,	33
Near the head of Hart's mill pond,	50
Near Tyler's mill,	66
Below Dabney's mill,	110
Below Anderson's mill,	150
Below Redd's,	180
Below Madison's upper mill,	200
Below the Great falls,	240

At the time of the survey the river was remarkably low for the season, and represented to be only a few inches above its low stage; it will, generally, afford a sufficiency of water for an improved navigation of 1½ ft. depth, except in very dry seasons. The mode of improvement recommended, is similar to that of Willis's river, as far down as Anderson's mill, except where dams already exist and locks must be constructed through them: below Anderson's mill, the size of the river is too considerable for this plan, and a system of locks and dams must be resorted to.

From the above statement of the fall, which is double that made by Thomas Moore in his report of 1820, it will appear that the number of locks will be considerable, and that the funds that can be obtained for the execution of the improvement being limited, it is expedient to adopt for the works, as cheap a mode of construction as is consistent with their purpose: this I have done in the following estimate. The dams I propose, to be built of framed timber, strengthened with a body of stones; the locks must necessarily be of wood, with the occasional support of dry stone walls, where they may be exposed to the violence of the current. They should be 70 feet long and 8 feet wide in the clear.

The fall from Brock's bridge to Ellis's mill pond, will require a dam of about 2¾ feet height with falling gates, which may cost,	70
To enlarge Ellis's race and clear the pond,	250
For a canal to be cut round the mill from the race to below the bridge,	75
For 2 locks 9.30 feet lift together,	1,200
The supply of water being rather weak above the mill, it will be proper to bring by a race the water of Hickory creek into the mill race, which was ascertained to be practicable; this might cost,	160
Total amount from Brock's bridge to the mouth of Hickory creek,	$1,755

Considering, however, that the supply of water is short in this distance, and that it would be nearly as convenient to bring the produce from the surrounding country to Ellis's mill, I think, as Thomas Moore, that Hickory creek might be made the head of navigation, whereby the above expense would be saved; I have therefore not included it in the general estimate.

From Ellis's mill to Hart's mill, for removing obstructions,	30
For 10 dams and falling gates, the sluice being 8 feet wide,	900

Hart's mill dam will require a canal to be made around the right abutment to a point 145 yards lower down, where there is a sufficient depth of water to lock into.

Two locks of together 9.08 feet lift, which, though more expensive than one, will be more expedient because of the economy of water that will result therefrom,	1,300
For the canal,	80
For paving the bank with stone where abraded by the power of the water tumbling over the dam,	50

From Hart's mill to Jirdone's mill pond at the junction of the south and north forks of the North Anna, there is much good water, interrupted occasionally by gravelly shoals, over some of which the water was not more than 4 inches deep, and its body too small to procure a suitable depth by sluicing through these ripples: the same plan as above is therefore recommended.

For five dams with gates,	525
For removing obstructions and a few points of rock,	15

At Jirdone's mill, the height of the dam above the point where the locks should enter the river, is very nearly 11 feet, which will require two locks. They might be made cheaper on the right bank, but will be more safely located on the left, where a canal 130 yards long will have to be cut from the pond to the outfall, where the water is deep, and lock foundation good. The beginning of this canal will pass through rock; there, its width should be reduced to 9 feet, and one of the locks should be placed. The bank averages 3 feet above the level of the pond.

For a canal 18 feet wide, 3 feet deep, and lock pits,	350
For 2 locks of 11 feet lift together,	1,250

From the outlet of the canal round Jirdone's mill to Tyler's mill, there is much good water: a few shallow ripples intervene; they might be overcome by wings; but it will be more expedient to build a

Amount carried forward,	$4,500

Amount brought forward,	4,500
low dam at the head of Tyler's mill pond, which, with its gate may cost,	110

Tyler's mill dam must be passed, round its left abutment, by a canal with two locks, and an intervening basin, large enough to avoid more depression than 4 inches in it, at the drawing off of a lock-full of water.

For the canal and lock-pits,	250
For 2 locks of 9.80 feet lift together,	1,250
From Tyler's mill to Dabney's pond, the fall is little, and the water no where less than one foot deep. At two places where the river is too shallow, it may be improved by small wings of brush and stone, say,	15

There is a shallow place near the head of Dabney's pond, but owing to the pond being about nine inches lower than the dam, the shoal when the dam is made sufficiently tight, will be deep enough.

Dabney's dam is very bad, and will have to be rebuilt; it must be turned round its left abutment.

Expense of canal and lock-pits,	210
Two locks of 9.25 feet lift together,	1,200

Between Dabney's dam and Anderson's mill-pond, there are a great many ledges across the river, affording good sites for dams; through some of these, channels must be cut.

For dams with falling gates, and making channels through narrow ledges,	720

A single dam of 7 feet lift, with a lock in it, by which the whole fall would be overcome, might also be made; it would cost probably $1,500, but might, on the other hand, be rented as a mill-seat.

At Anderson's mill, the canal should be on the right bank; it would be desirable to have here two locks for the same reasons as at the other mills; but there is a want of room: two locks would require that the upper one should be placed above the dam in the pond, which would be attended with much expense. On the score of economy, therefore, it will be preferable to have but one lock here.

For the lock, with wall on its lower side,	1,150
Amount carried forward,	$9,405

Amount brought forward, $9,405

w Anderson's mill, the body of water becomes
eat for the plan before suggested, unless gates
d to broader sluices, and consequently produ-
more rapid discharge of the accumulated wa-
uld be adopted. Gates working upon the
le of hydrostatic pressure would be the most
ne; but being more expensive than the former,
difficult of adjustment, I should prefer at once
usual system of locks and dams, which is equally
rable to the ascending and descending navigation.

A dam may be built at the head of Redd's mill-
o the foot of Anderson's dam.
he lock in it, 2,000

, a canal must be made round the
yards long; it will encounter some
k.
a canal and lock-pits, 360
two locks of 10½ feet lift together, 1,250

At Redd's mill the great falls of the river begin;
bed of the stream is intersected by numerous
running in almost every direction; over these,
er is mostly shallow; it would be very expen-
to cut through so many ledges artificial channels
of proper dimensions: it will be preferable to raise the water by means of dams with locks in them.

For three dams and locks, 5,850

At M'Laughlin's mill both sides are steep and rocky; it would be very expensive to cut a canal round either abutment, and also to divide the fall by two locks. There is no other alternative, than to put the lock in the dam itself, and to raise the next dam below, so as to back the water up to this lock, which should be substantially built, on account of its exposed situation. The right extremity of the dam appears the best site for the lock.

For a lock of 9 feet lift, 1,480

For opening the channel below, 40

For a low dam and lock at the head of Madison's upper mill-pond, 1,450

From Madison's mill to Quarles' pond, the river is one constant fall, studded with rocks, it will be in-

Amount carried forward, $21,835

Amount brought forward,	$21,835
dispensable to cut a canal the whole way on the right side; this will require some blasting round the abutment, which may be estimated at	180

The rest of the canal will pass through stony, and in places, rocky ground.

For a canal 300 yards long, 12 feet wide and averaging 4½ feet cutting, with lock-pit,	750
For two locks of 11½ feet lift together,	1,300

Quarles' mill dam must be turned round its right abutment.

For a canal 60 yards long,	70
For a lock of 8 feet lift,	700
For a dam and lock of 4½ feet lift at the head of Terrell's pond,	1,400

At Terrell's mill, a lock must be made in the right abutment, with a pier extended upwards in the pond for the protection of boats at the entrance.

For a lock of 7.75 feet lift, and pier 100 feet long: The rock to be obtained from some blasting at the outlet of the lock,	925

Madison's lower mill, also called Oxford, or Fall's mill, is the most difficult site to pass. The fall, from the head of the dam to the most eligible point to lock down at, is 13.40 feet, and the distance 100 yards. Both banks are rocky: The left one being occupied by the mill, a canal resting upon an artificial foundation of stone, must be made along the cliffs of the right bank.

For an artificial canal protected outside by stone work,	1,500
For two locks of together 12 feet lift,	1,300

Below the falls there is an island, into the right channel of which the canal will lock down: This lower point of the canal is higher than the lower point of the mill wheel on the left shore; but owing to a partition of rock along the middle of the river, it may yet be raised higher by a dam across the right channel, without interfering with the wheel.

For a dam across the middle of the right channel, with lock of 4 feet lift,	1,050
For another dam 4 feet high, with lock just above Cooke's ford,	1,100
Amount carried forward,	**$32,110**

Amount brought forward, $ 32,110

After the ford, the river becomes much better; yet, in the next mile, the fall being considerable, and there being a good site for a dam, there should be one raised of 5½ feet lift.

For this dam and a lock, 1,150

Thence to the junction of the North Anna and South Anna, the fall is much less; the bottom is generally sandy, and the water sufficiently deep, except at a few shoals of sand or gravel, the most important of which is at Fall's point. An improvement of the ripples, by sluices formed by wings, extending perpendicularly towards each other from the shores, and made of brush and stone, is deemed sufficient. I do not think it expedient in this sort of improvement to make parallel walls, especially in so narrow a river: I would prefer wings repeated as often as necessary on the same shoal, and extending from either shore, so as to leave a sluice of suitable size between them. The width of a sluice should be such as will furnish a vent to the water with only the requisite depth; this can easily be determined by a measurement of the width of the river at places where it has the proper depth with nearly the same current. Sluices of too narrow dimensions become deeper than necessary, and are apt to create new shoals, and thereby rather to injure than improve the navigation.

For sluices and wings from Cooke's ford to Fall's point, and closing a few small channels, 240

From Fall point to the mouth of the South Anna, no considerable improvement is necessary: the removal of some drift timber and the making of a few fences of stakes driven in the sand and forming wings, to deepen sluices over shallow places, are all that is requisite. These sandy shoals are generally short, and will yield with ease to the increased power of a contracted current.

For clearing away obstructions and forming a few sluices by means of hedges, 100

Total amount, $ 33,600

For superintendence, contingencies, &c. 3,400

Total estimated cost of the improvement, $ 37,000

In several places, the idea of cutting through some bends of this river may be suggested. But, this plan I would generally object to; both on account of expense and of the injury that would be done to the navigation by the increased energy of the current through these short canals. I have given more development to this subject in my report on the Mattapony river.

* * *

REPORT ON THE SURVEY FOR A ROAD FROM DANVILLE, PITTSYLVANIA COUNTY, TO WYTHE COURT-HOUSE,

Conformably to the resolution of the General Assembly, of January 11th, 1825, directing a survey for a road to be made "by the shortest possible route, from the north end of the bridge across Dan river, at Danville, in the county of Pittsylvania, to Wythe court-house." The most direct road now existing between these two places, was surveyed during the last summer, with the view of obtaining the necessary information preparatory to the location of the road. The following are the principal results of this operation:

The course from Danville to Wythe court-house, or Evingsham, is N. 77½ W. The direct line passes exactly through Henry court-house. The straight distance is 96½ miles; the road surveyed, 130½ miles: It crosses the straight line twelve times between Danville and the Alleghany mountain: Its greatest deviation within this distance is 2¾ miles.

The Alleghany mountain, by some called there the Blue Ridge, was crossed at Truggle's gap, which is 3 7-8 miles to the north of the straight course.

It is frequently also passed at Ward's gap, 12½ miles south of the straight line.

West of the Alleghany, the road surveyed deviates 5½ miles to the north, and then returns to the straight course, which it crosses again near the county line of Montgomery and Grayson. It then deviates 6¾ miles to the south of the right course, which it meets once more at Lick mountain beyond New river; whence to Evingsham it keeps near to, and on the north side of, the direct line.

It is only between the Alleghany and Lick mountain, a distance of 48 miles, that the present road is susceptible of being materially shortened. A plan, exhibiting all these, and other particulars, has been prepared from the field-book and deposited in the office.

The ground between Danville and Henry court-house is very good for a road. The present one crosses Smith's river the first time at Waller's ferry, exactly on the general straight course. The only remarkable locality thence to the Alleghany is Bull mountain, which is passed at a low place near its termination: This mountain, from all accounts, and according to appearances, is too difficult to be used as a leading ridge; nor could it be well crossed at a more southern point. In order to avoid its spurs, the road must pass to the north through Truggle's (otherwise Mowbray's) gap, or else take a more southerly course towards Ward's gap.

The Alleghany mountain is the only ridge of any magnitude traversed by the direction of this road. At Truggle's, or Mowbray's gap, it is steep and rocky on the east side, but may be graduated. The declivity is almost imperceptible on the west side. Thence to New river, the ground is generally firm. The country is intersected by numerous ridges and deep vallies, some of them occupied by bold and constant streams, the principal of which is Big Reed Island creek, which is 62 yards wide where crossed. This section presents no very considerable difficulty, but will require a diligent search, and some exercise of skill, to locate the road on the most advantageous ground, through so broken a country. The most important ridge in this space is the Poplar Camp mountain.

New river was crossed at the mouth of Poplar Camp creek, a few miles below the lead mines, which are represented as very productive; its width is 132 yards, its banks are low and there is no indication of freshets higher than 10 feet: their ordinary rise is about 4 feet.

From New river to Evingsham, the country is only undulated, and presents no obstacle to the making of a good road, which must follow pretty nearly the direction of the present one, and turn the north end of the Lick mountain, at the same place.

According to my instructions, I should locate the road by Truggle's gap, as the most direct way; but as regards the benefits conferred by the road, there might be some advantage to pass by Ward's gap, if upon examination of this route, the ground should prove equally favorable.

The intercourse between Wythe court-house and Danville, is evidently not the main object of the intended road. It appears rather designed for the accommodation of the surrounding country, and to facilitate the travelling from North Carolina westwardly. The inhabitants of the northern part of that State, it seems, prefer to pass through Virginia, rather than encounter the high ridges of the Alleghany on a more southerly route. The road they travel lies through Ward's gap. A location through Truggle's gap, 17 miles further north, though more direct, would entirely miss this particular object, and could not be made to pass through Patrick as well as Henry court-house; whereas, if Ward's gap be taken, the road will embrace the principal places in the distance, and afford the most desirable accommodation to that section of the country.

No survey was carried through Ward's gap; and consequently, I cannot state precisely what is the length of the present road through it; but, as Truggle's gap is 3 7-8 miles north, and Ward's gap 12½ south, of the direct line, it is not probable that a road would be more than 6 miles longer by the latter than by the former pass, unless there were very unusual difficulties in the way. This increase of distance would be insignificant, when compared to the advantage of obtaining the travelling from North Carolina, and passing through Patrick and Henry court-houses.

I would, therefore, respectfully suggest, whether it would not be expedient so to modify the instructions of the Principal Engineer, on this subject, as to authorise him to locate the road through Ward's gap, if the ground should be found equally favourable.

◆

LOCATION OF THE ROAD OVER THE WARM SPRING MOUNTAIN.

The former road over the Warm Spring mountain was in places very steep; about the beginning of August it was located on a new route. The ascent of the new road on the east side varies between 2 and 6 degrees, according to the ground passed over: it is only, however, at one place, and for a few poles, that the acclivity is as much as 6 degrees. On the west side, the declivity is generally 4½ degrees. The road was put under contract soon after its location, and is now constructing: a plan of the location will be found in the office.

From Thompson's creek to the Warm Springs, the old road was 5.17 miles long; the new one will be 5.87 miles in length. The ground is generally very firm, except at the eastern base

in, where it is soft in spots, and the road will
e to be capped with stone.
oad will cost $ 3,600, for the whole distance of
will be 18 feet wide along the face of the moun-
et on level ground.

* * *

RT ON THE SURVEY FOR A ROAD FROM LYNCHBURG TO LEXINGTON.

s survey was made during the month of October last.
rincipal difficulty between Lynchburg and Lexington,
ie Ridge: The most direct depression in which is
son's gap, which is situated a little to the north of the
ht course between the above named places: The gap of
s river, through which the canal has been located, is some-
farther to the south of the same line. But, there being
l considerable ridges between Lynchburg and Robert-
gap, it cannot be approached without much winding; and
therefore convinced, that a road through this gap would
dered much longer by its necessary windings among the
of the Blue Ridge, and by the graduation over the main
tain itself, which is high there, than one passing through
hasm made by James river. It would, besides, not be so
ble on many other accounts.

A road through Robertson's gap, even if as short, would be much more laborious to travel than one by the canal, which would encounter no ridges, and be frequently on long stretches of level ground. The latter route has, moreover, the advantage to lead more directly towards the Natural Bridge and Pattonsburg, as well as Lexington. The canal itself, if it could be easily approached, is an object of curiosity that travellers would frequently be inclined to visit: And lastly, the north branch not being always navigable, it may often be advantageous to carry the produce by waggons from Lexington to the canal, which the proposed route will facilitate.

Having come to the conclusion, that there would be many advantages to pass by the canal, I examined the intervening ground. Two routes presented themselves; the one leading on the south side of James river to the lower end of the canal, and crossing the river at the public bridge; the other crossing it at the mouth of Sugar-Tree branch, above Pedlar river, and reaching the extremity of the northern section of the canal, at the toll-house near the head of the bridge.

A straight line drawn on the Map from Lynchburg to the canal, intersects James river about the mouth of Pedlar river; hence it appeared that this route might be the shortest, but the measurement proves it to be otherwise. The distances are as follow:

Route on the north side.

	Miles.	*4 pole chains.*
From Lynchburg to Sugar-Tree branch,	11	41.90
To the mouth of this branch,		30.70
Width of James river at the Pedlar falls,		6.93
Thence to St. Patrick rock at the Irish falls,	8	69.60
Thence along the river to the head of the Cushaw cliffs,	1	23 67
Thence to the toll-house,		45 59
Total distance from Lynchburg to the toll-house,	22	57.79

Route on the south side.

	Miles.	*Chains.*
From Lynchburg to Sugar-Tree branch, as above,	11	41.90
Thence to the lower end of the canal, passing by Eubank's and Waugh's ferry landing,	7	60.41
On the upper side of the canal,		21.30
Across ditto, and along the tow-path and re-crossing,		74.55
On the upper side of the canal to the bridge,	1	8.25
Along the bridge and abutments, (length of bridge 560 feet,)		11.97
Thence to the toll-house,		1.28
Total distance from Lynchburg to the toll-house, by the southern route,*	21	59.66

---

* The straight course between these 2 points, is N. 49 2-3 W.; and distance, 18 miles 48 chains.

Shewing a difference between the two routes, and in favour of that on the south side, of very nearly one mile; besides which, it must be observed, that the location of the last route would not increase its length, the angles of ascent and descent in the survey, exceeding but seldom 5 degrees, and that generally for a short distance only, and there being no ridge to cross, and great part of the road being along the river; whereas, on the north side, the road would certainly be made longer than the survey by a proper graduation, there being several long and steep ascents and descents, frequently exceeding 9 and 10 degrees, which could not be reduced to five degrees without loss of distance; so that the northern route would probably be at least one and a half mile longer than the other; though on the map its general course is more direct.

The expense of making a new bridge on this route, and its taking away the travelling from the public bridge, are additional considerations against it. And again, it will be easier to make a road on the south side along the canal, than on the opposite side from St. Patrick's rock up to the Cushaw falls, a distance of one and a quarter mile, where great part of it would have to be raised beyond the reach of freshets by artificial embankments: on all accounts, therefore, the south side is preferable for a road.

	Miles.	*Chains.*
It has been stated above that the distance from Lynchburg to the toll-house by the south side is,	21	59.66
Thence on the upper side of the canal to above the lock beyond Col. Gamble's house,	2	26.70
Thence along the canal to just below the flat rock,	1	25.50
Thence on the upper side of the canal to the North branch,		69.14
Total distance from Lynchburg to the North branch,	26	21.00

The distance following James river which winds but little, is 27¾ miles.

The course is N. 50½ W.; straight distance, 22 miles 14 chains.

	Miles.	Chains.
From the mouth of the North branch, along its bank, up to its crossing at the mouth of Buffaloe creek,	4	53.32
Across the river at the ford,		5.25
Thence to the door of the court-house at Lexington,	8	65.79
Distance from the canal to Lexington,	13	44.36
From Lynchburg,	39	65.36

The straight course is N. 35 W., and distance, 30 miles and 20 chains. The course from the canal to Lexington, is N. 1⅓ W., straight distance, only 10 miles and 74.20 chains.

The proposed road may be divided into three distinct sections; the first from Lynchburg to the canal; the second along the canal; the third from the mouth of the North branch to Lexington.

The section along the canal is the only one which presents more than ordinary difficulties; and it is much to be regretted that, at the time this work was made, the tow-path was not prepared for a road, which might then have been done at comparatively a small expense; whereas at present, along the section of the canal near the Big Balcony, a distance of one mile and 560 yards, a convenient road could not be made without an enormous expense. This, however, is the only section which will not allow of a good road to be made within a reasonable expenditure.

On the south side, the road may be made without extraordinary expense, part on the upper side, part on the tow-path of the canal, for the distances above stated. On the north side, at both extremities, the road must be made on the upper side; but, about the middle of the distance, near the Big Balcony, this plan is not practicable. It has been suggested by some persons, that the bank might be upheld inside by a perpendicular wall, and the intermediate space filled up with earth; but this plan would be very expensive; it would require, besides the wall and embankment, a double railing all the way; and would, after all, answer but imperfectly the purpose. As to enlarging the tow-path outside, it is entirely out of the question.

Considering, therefore, the difficulty of making a road in this distance of 1 mile and 560 yards; and it being evident that only light carriages will travel it, I think that the most eligible plan will be to keep one or two boats, according to the exigencies of the travelling, to transport carriages and unsafe horses in that distance, which being short, there will not be any considerable delay produced: men on foot, and most of those on horseback, will keep along the tow-path. This plan will answer nearly as good a purpose as a road, and be much cheaper, especially as hands must ever be kept at the Blue Ridge to attend to the repairs of the canal and road, and may at the same time perform the service of transporting the carriages in the boats during the travelling seasons.

Inconvenient as it is, many persons travel this way now on horseback; and if a good road was made all the way, with only the short transportation in boats just mentioned, I am convinced that much travelling would take this course, and increase the revenue of the tow-path and bridge, beyond the interest of the additional expenditure. It may be proper to add, that the proposed road through the Blue Ridge, keeping generally very near the canal, which is public property, it would appear expedient that the road through this section should also be made by the State; the balance being constructed by the private stockholders of the company.

The probable cost of this road would be as follows:

From Lynchburg to the first crossing of the canal,	$ 12,000
Along the canal, widening the tow-path, paving in places, two bridges,	4,000
On the upper side of the canal up to the bridge,	450
On the north side of James river, from the bridge to the lock above Col. Gamble's house, keeping all along on the upper side of the canal; for the road and one bridge,	2,000
From Col. Gamble's house to the Flat Rock; two boats,	200
From the Flat Rock to the North branch, keeping on the upper side of the canal, and one bridge,	950
Thence to Lexington,	9,500
Total amount,	$ 29,100

A map of this survey will be found in the office.

REPORT ON THE CONNEXION BETWEEN ROANOKE AND NEW RIVER.

It is with great satisfaction that I find myself enabled to report, that a route for a canal to connect the eastern and western waters has been found through the State, by far superior to any of the routes hitherto surveyed. The point of connexion is situated between the head waters of Roanoke and New river. The facilities presented here, exceed the most sanguine expectations that had been formed. A most abundant supply of water can be brought to the top of the Alleghany mountain by a feeder of 9½ miles long; the canal, unlike the other routes, requires neither navigable tunnel nor reservoir. The top of the dividing summit is flat; its declivity on both sides gradual, and the ground mostly favorable for excavation: a great part of it in the vallies, down which the canal must descend on either side, is either cultivated or susceptible of being so. The making of a canal from one river to the other will, therefore, be attended with but little difficulty; probably with less than down the main streams themselves.

A rail-way would likewise be quite practicable.

There are in this neighbourhood several depressions of the Alleghany differing but a few feet in elevation: that which is thought most eligible for the passage of the canal is situated about five miles south of Christiansburg, in Montgomery county, between the heads of Elliot's creek, which flows into the Roanoke, and Meadow creek, one of the tributaries of New river. This point, requiring but a short feeder, is preferred for a canal: for a rail-way, the most eligible pass is situated three miles north of Christiansburg, between the head of Stroubler's creek, which empties into New river, and the north branch of Roanoke.

The point preferred for a canal is 451 feet higher than the mouth of Sinking creek; the other is six feet lower than that.

The mouth of Sinking creek is 1,565 feet above tide water:* So that the elevation of the dividing summit above tide water is 2,016

The base line assumed is 30 feet lower, calculating on a cut increasing gradually to this maximum depth, and 1,160 yards in length.

---

* In J. Briggs' report the elevation of New river at the mouth of Sinking creek is stated at 1,585 feet. But, as this is deduced from the fall of James river from Covington to tide water, and in the two surveys I have made, I have found it 20 feet less than Moore and Briggs, I have deducted these 20 feet from the elevation of Sinking creek, as given in J. Briggs' report.

The feeder is taken out of Little river, a copious tributary of New river. A short distance below the beginning of the feeder, it will enter the Pilot mountain, and pass through it in a tunnel 400 feet below the top of the ridge, which being sharp, and the deepest shafts sunk on each side, they will not exceed 350 feet. The tunnel will be 1 mile and 200 yards long: being intended merely to convey the supply of water to the summit level, it will not be liable to the objections of navigable tunnels.

The feeder, after having issued out of the Pilot mountain, will pursue the windings of the hills, with a fall of about nine inches to the mile, and reach a low place of the Alleghany at the head of Mill creek: there it should cross the mountain and pursue its course along the eastern face of it, to the low point where the summit level of the canal is intended to be.

The canal, by crossing the ridge at this second low place, will be shorter than through the depression where the feeder is purposed to be brought over the Alleghany on the route of the canal, within about two miles of the ridge. Elliot's creek on one side, and Meadow creek on the other, afford a lively supply of water. All the particulars of this operation are exhibited on a map which has been deposited in the office.

Near this point of connexion, I have found hydraulick lime, a specimen of which accompanied those which were found on James river. This lime hardens very quick under water. The due proportion of sand to be mixed with it, and other particulars, must be determined by future experiments on a larger scale.

In this neighbourhood, on New river, is a valuable lead mine; and on the Roanoke side, iron and copper ore are found; and also, a remarkably fine burr stone, used in mills in the surrounding country, and by some even preferred to the French burr.

The following is a comparative exhibit of the principal routes hitherto surveyed for canals between the eastern and western waters: The statements therein contained are taken from the most authentic sources.

COMPARATIVE VIEW,

Of the several routes hitherto surveyed for a Canal connexion of the Eastern and Western waters.

1st.—OHIO AND CHESAPEAKE CANAL.

DEEP CREEK ROUTE.

	Distance in miles.	*Lockage in feet.*				*Length of Tunnel.*	*Deep Cut.*	*Elevation of the ridge above the assumed base line, in feet.*	*Length of feeder in miles.*	*Minimum supply of running water at the origin of the feeder, in cubic feet per second.*
		ascent.	*descent.*	*per mile.*	*total.*					
From tide water in the Potomac, to Cumberland,	186	578	-	3	-	-	*Western.* *5m. 480 yds.*			
From Cumberland to the mouth of Savage river,	30 1-4	327 1-2	-	11						
Thence to the mouth of Crab-Tree creek,	5	383	-	77			*Eastern.* *352 yds.*			
Thence to the east end of the summit level,	8 3-4	1051	-	120	-	-				
Summit level,	13	0	0	0						
From the western end of ditto, to the mouth of Bear creek,	15	-	912	61						
Thence to a point of the Youghogany, 1-4 of a mile below the mouth of Casselman's river,	16 3-4	-	164	10						
Thence to the Ohio at Pittsburg,	85 1-4	-	619	7 1-4						
Total amounts,	360	2339 1-2	1695	-	4034 1-2	*mil. yds.* 1—568	5 *m.* 832 *yds.*	227	10 1-2 *m.*	32

N. B.—These statements differ in some points from those made in 1825, several of which were then obtained by mere computation.

2d.—CAS.

From tide water to Cumberland, as above,	186	578								
Thence to the eastern end of the summit level,	29 1-4	1325	-	45	-	-	*Western cut.* 1060 *yds.*			
Summit level,	5 3-4	0	0	0						
Thence to a point of the Youghogany, 1-4 of a mile below the mouth of Casselman's river,	35 3-4	-	636	18	-	-	*Eastern.* 140 *yds.*			
Thence to the Ohio at Pittsburg, as above,	85 1-4	-	619	7 1-4						
Total amounts,	342	1903	1255	-	3158	*mil. yds.* 4—80	1200 *yds.*	856	3 1-2 *m.*	18

3d.—*JAMES AND KANAWHA ROUTE.*

From tide water to Covington,	258	1218	-	4 3-4			*Eastern deep cut*—395 *yds.*			
From Covington to summit level,	* 22	700	-	58	-	-				
Summit level,	4	0	0	0						
From the western end of the summit level to the mouth of Greenbrier,	* 59	-	605	10	-	-	*Western.* 932 *yds.*			
From thence to below the Great Falls of Kanawha,	67	-	744	11						
Total amounts,	410	1918	1349	-	3267	*mil. yds.* 3—440	1327 *yds.*	399	*38 1-2	*60

The numbers marked (*) are obtained by computation from exploring surveys. They are believed to be very nearly such as more minute operations would furnish. In comparing the Ohio and Chesapeake route by Casselman's river, it will readily be observed that the tunnel alone there is longer by 1400 yards than the summit level here: hence, some latitude is left on this route, and to establish a fair comparison, the level should be sunk enough to produce the same length of tunnel, 4 miles and 80 yards. From the data in my possession, it appears that such a tunnel would become necessary, if the level was sunk 40 feet, which would reduce the lockage to 3,187 feet, which is only 29 feet more than on the Casselman's route. This lowering of the level would also increase the supply of water, both by taking it out at a lower point of Greenbrier river, and also by reducing the length of the feeder, to probably 32 miles.

4th.—ROANOKE AND NEW RIVER ROUTE.

From tide water to the summit level in Montgomery county,	* 260	1986	-	5 1-2						
Summit level,	3-4	0	0	0						
From the western end of the summit level to the mouth of Sinking creek,	* 35 1-4	-	421	17						
Thence to the mouth of Greenbrier,	55 1-4	-	252	4 1-2	-	-	*Deep cut.*			
Thence to Bowyer's ferry,	46 1-2	-	403	8 3-4						
Thence to below the Falls of the Great Kanawha,	20 3-4	-	341	16 1-4						
Total amounts,	418 1-2	1986	1417	-	3403	*No* Tunnel.	1160 *yds.*	30	9 1-2	100

The numbers marked (*) were obtained by computation.

The lockage is more here than on the Casselman's route; but it must be observed, that the supply of water requires no tunnel, and that in order to make a fair comparison of the two routes, in regard to lockage, a tunnel of 4 miles and 20 yards must likewise be introduced here. To obtain a tunnel of this length, the line would be sunk about 155 feet, which would reduce the lockage to 3093 feet, which is 65 feet less than on the Casselman's route.

From the preceding table it will appear, that, as far as the facilities found at the summit level are concerned, the connexion between Roanoke and New rivers offers decided advantages. The lockage for an open canal is greater than on the Casselman's route; but this is more than compensated by a most ample supply of water, without the expense and inconveniences of either reservoir or navigable canal.

The lockage, indeed, as stated in the last table, might be made less than on the Casselman's route, by constructing a tunnel of the same length; but this diminution of lockage would be purchased too dear by the sacrifice of one of the principal advantages of the route; that of being most abundantly supplied with water without a tunnel.

On the side of Roanoke, there does not appear to be any difficulty in the descent of a canal towards tide-water.

But, according to all accounts, a section of the valley of New river, between Bowyer's ferry and the great falls of Kanawha, presents difficulties of the first magnitude. By reference to Ths. Moore's report, (4th annual report of the Board of Public Works, page 25,) it will be seen that, from the end of the 47th mile, which is half a mile below Bowyer's ferry, to the 64th mile, the fall is 294.79 feet, which is nearly an average of 18½ feet per mile. The river is described by him, and also by the distinguished gentlemen who first descended this formidable stream, as presenting the most wild and discouraging aspect in this distance. They concur in the opinion, that a lateral canal is impracticable: but Ths. Moore, (same report, page 32,) expresses the opinion that a rail-way is practicable on the south side of the river. This is also the belief of gentlemen acquainted with the river.

It would be premature to decide now what is the best plan to improve this difficult section; but, as it is common to the two routes discovered in Virginia, and it is the only point which offers more than ordinary difficulties, it is proper to shew that these are, by no means, such as to deter from the undertaking and invalidate the other advantages of the route.

In the 48th mile, Ths. Moore recommends a canal to turn the fall in it.

At the falls in the 49th mile, he states that the tracking plan must be adopted; which demonstrates the possibility of making a road along the margin of the river.

In the 50th mile, he speaks also of towing.

In the 51st mile, the same: there the baggage was carried along the shore.

The nature of the bank in the 52d mile is not designated; but from the estimate it is presumed not to be worse than the preceding one.

The 53d mile is said to be less rugged.

The 54th, 55th, 56th, 57th, do not appear to be worse than the preceding.

In the 58th, the fall is only 10.78 feet; in the 59th, 9.28, and in the 60th, 13.42: The tracking plan is again mentioned.

In the 61st and 62d together, the fall is 60.68 feet: They are described as the most rugged of the whole distance, yet the baggage was carried along the shore, and a tracking way is again spoken of.

The 63d mile is pretty much of the same character as the preceding: below this, there is no further extraordinary difficulty.

The foregoing analysis of Mr. Moore's report shews, that he considered a tracking way, at least, as practicable; and the same is rendered more than probable by the circumstance that, in the most difficult passes, the baggage was carried along the bank, and the survey proceeded without interruption the whole way. Hence, an open rail-way appears quite practicable: its greatest rise in any one mile will be 31 feet. It may happen, however, that, in some places, the abruptness of the bluffs may be such as to render the location of the rail-way, at its proper height, either unsafe or too expensive. In such cases, the difficulty could be obviated by passing through the cliffs by short tunnels, having occasional lateral openings upon the river. These tunnels need neither be high nor wide, and would require no shafts: hence their expense would not be considerable, and they might probably be found, in most cases, preferable to an open rail-way, held up by walls exposed to the violence of the stream, or blasted out of a steep slope of rock on the very verge of a precipice.

Indeed, by means of these short tunnels, with lateral apertures, a canal might likewise be carried along the river the whole way; but of course, its expense would be considerable.

It is, therefore, obvious that this section, though unfavorable, can be improved much easier than is generally supposed; and the other parts of the line of connexion may be undertaken with perfect certainty of success.

It will be a proper subject of enquiry, before attempting the improvement of that section, whether it would not be practicable and more advantageous to pass from New river to Meadow and Gauley river, and thus obviate the great difficulties of the falls of New river. In the mean time, as soon as it shall be deemed expedient to use New river as a channel of commercial communication, and to unite it with the Roanoke, the Kanawha turnpike may be connected with Bowyer's ferry by a short road of probably not more than three or four miles, which would reduce the portage to about 20 miles, until the increase of trade and intercourse would render a more complete improvement advisable.

From Gauley river to below Witcher's shoals, a distance of 24 miles, in which the descent, including the Great Falls of Kanawha, is, by Ths. Moore's report, 85.60 feet, there should be made, then, either a rail-way or a canal.

It is further presumed, that Roanoke and James river might be connected in the neighbourhood of Fincastle and Pattonsburg. If, as every appearance indicates, this plan, upon examination, was found practicable, the junction of Roanoke and New river would receive additional importance; as by this means, the trade of New river and its tributaries, that of the Holston and of Roanoke, and also the commerce on James and Jackson's rivers and their tributaries, would all meet in Botetourt. The concentration of trade thus effected, would have an immense influence on the prosperity of the State.

◆

REPORT ON THE STAUNTON AND JAMES RIVER TURNPIKE.

I reported last year on the sections of this road which were then completed; it was entirely finished during last summer, and had reached Scottsville when I examined it.

From Staunton to Waynesborough, the road cuts deep in many places, which will require a covering of stone. This has already been spread in several places, but in general the stones are much too large; and besides, they appeared to me to have been laid upon the road without any previous arrangement; whereby the rounding of the carriage-way already objectionable, is still more increased. Before spreading the broken stone, earth should be removed to make place for it and preserve the proper shape of the road.

The road from Waynesborough to the Blue Ridge is good. Up the western ascent of the mountain, it is too steep and rather soft; the nature of it was an additional reason made the grade less, which was practicable. Considering what slight reasons frequently induce to increase the grade of a road, sometimes as much as one degree or over, it would seem that the influence of one degree on the draught of horses, and on the preservation of roads, is not generally appreciated by those who locate them; and yet, even on a good turnpike, the load of a waggon may be made at least one hundred pounds more per horse up an ascent of four degrees than along one of five degrees, and the case is still worse on a bad road: And as regards the preservation of the road, the greater its declivity, the more it will wash and cut.

The graduation on the eastern side could not have been better; but, at the base of the mountain, though I viewed it in the summer, the consequence of having taken the road through soft ground, instead of pursuing the low leading ridge close by, was already very striking: Thence to the Ragged mountain, this defect of keeping in the bottoms instead of the hill-sides, is likewise observable in many places, where the road will be totally impassable in winter. The only motive assignable for this unfortunate location, is the intention of saving some labour and expense; but, the necessity of capping such miry places with stone, greatly outweighs the original economy of the plan.

Over the Ragged mountain, the road is unnecessarily steep: to avoid steepness is, I conceive, one of the principal objects of an improved road; but unfortunately this is generally lost sight of. and the convenience and actual object of the improvement are too frequently sacrificed to an unimportant saving of distance, which is purchased by a loss of time and power. While five degrees is generally proposed as a limit, it is usually assumed, at once, as an eligible graduation: this grade requires that waggons should be locked, and therefore it should be carefully avoided, unless in cases of absolute necessity: indeed, it sometimes happens that it must be exceeded; but this should only be for a short distance, over which horses may pull up their load with some additional exertion, of which they are capable for a short time, but which, if continued, would injure them or require a diminution of their load, and consequently a sacrifice of part of the benefit intended by the improvement. These remarks cannot be too often repeated; for, the error itself is repeated in almost every location.

Between the Ragged and the Green mountains the location is frequently defective in this respect; the grade being generally steep, and most commonly, without apparent necessity. In places, the road descends into deep miry bottoms which it might have avoided by pursuing the hill-sides at an easy graduation; thereby benefiting the travelling interest, and undoubtedly also, the company itself, since the location, as it is, will require more stone-capping and other repairs: the necessity of spreading stone on the road has already been felt; but wherever it has been done, the stones are not broken of a suitable size. From the light nature of the soil in this section, I apprehend that most of it will require this kind of protection when heavy waggons begin to travel it.

From the Green mountain to Scottsville, is the best section of the road; the ground is better, as also the construction of the road.

Although this turnpike is not so good as it might have been, it will nevertheless be one of the best roads in the State, when the miry places in it shall have been made firm by the superaddition of a bed of broken stone.

REPORT ON THE LYNCHBURG AND SALEM TURNPIKE.

This is a good road; in it has been avoided the defect so common to turnpikes, to be raised too high in the middle; indeed, in places it appeared to me to be rather too flat: this can easily be corrected. It would also be well to improve the vents for the water across, or under the road, which are rather imperfect; and to break the stones, with which it is capped, finer.

When I viewed this turnpike, an open bridge with stone piers was building over Little Otter; another bridge with a roof had been thrown over Big Otter, both of them with stone piers and abutments: the timber, however, was not of a durable quality.

The road extends now from Lynchburg to Liberty, a distance of 26 miles; its progress thus far has been very slow.

REPORT ON THE BLUE RIDGE CANAL.

The wooden locks at the lower extremity of the canal gave way last year in February, soon after the introduction of the water. They were repaired, but can certainly not stand. Since the facing of plank and timber has parted from the stone work, nothing but an irregular mass of stones, instead of a well-laid wall, has been exposed to view. There never was worse workmanship.

One of the stone locks on the south side had bulged, and threatened to fall, when I saw the canal first: it was since repaired and I was told that it took 1700 feet of stone to re-build it, over and above the quantity that was in the walls before, which shews how badly it had been built. The facing proved very thin, and the stones occupying the place of headers presented merely the outward appearance of such, but were very shallow.

All the locks leak much on this side, except the guard-lock which appears well built.

The double culvert over Snow creek, stands well, but leaks much, and the lime is washing rapidly out of it: it would be expedient to cover it with a good bed of grout in hydraulick lime: the use of common lime in such works must ever be deprecated.

The bridge across the river is on a simple and cheap plan, but sufficiently strong for the purpose: its railing only is too weak; it would be well to brace it inside, which would have the additional advantage of keeping the wheels of carriages off the railing.

The dam leaks much, in consequence of which the water when low sinks below its level; this, however, is very seldom the case.

The two lower locks on the north side are of stone; they look well and the stone seems good.

The next lock above had bulged so much that its walls had to be supported inside by a frame of timber; it will have to be re-built, in doing which, hydraulick lime, which can be obtained in the neighbourhood, should altogether be used.

The canal on this side leaks much, wherever it is built along cliffs, and especially where it is held up by high perpendicular walls, behind which the bank is very thin. In such positions there should also have been a bank on the upper side along the cliff, to cut off the communication of the water underneath the canal.

A great many weeds have already sprung up in the canal, which will prove very troublesome.

Except the lock above-mentioned, the works of art on this side stand well; the dry walls and pavings have stood several freshets extremely well, and it is remarkable that the rough lock through the upper dam, though exposed to the power of the current, is yet in good order, whereas those built by the contractors on the south side in a safe situation, have failed.

The canal is generally too shallow: this can be easily obviated in the intermediate reaches: but in the upper one, where the level is the same as that of the pond made by the dam, excavation is the only means to increase the depth. The canal was hardly deeper than 3 feet at any place; and, for great part of the distance, the depth ranged between 2 and 2¾ feet only, instead of 3½ required by the contracts. There must evidently have been an error committed in excavating the canal, which has certainly not filled up to that extent, as I took care to sound at places where the bottom was rock.

At the entrance of the canal before the guard-lock, much sand is accumulating; the depth at one place is only 1¾ feet: this deposition here, is inevitable; but the distance is short.

REPORT ON THE CANAL NEAR RICHMOND.

Nothing of importance has occurred on this canal since last year. In the spring, the Tuckahoe aqueduct split in several places, and some apprehension was entertained in regard to its safety: I repaired thither, but did not think that there was any immediate danger to be apprehended: it may perhaps not settle any further: I reported on this examination to the members ex officio.

Since the plan of bringing the coal from Chesterfield by the canal has been suggested, I have been informed that it was too shallow about the guard-lock below Tuckahoe creek; but, the water having been constantly high since, I have not been able to ascertain by personal examination the exact depth of the canal there at low water. I have, however, obtained a few days past from the superintendent of the canal, who measured it during the summer, precise information on the subject. The mitre sill of the guard-lock, though too high, is not sufficiently so to impede boats of a proper make carrying a thousand bushels of coal. It is just below the guard-lock that the shallowest place exists; there, the water is not more than 2½ feet deep for about 150 yards: this bar should be removed as soon as practicable.

All of which is respectfully submitted.

C. CROZET, *P. E.*

February 22d, 1828.

REPORT

ON THE

RAIL-WAY FROM THE COAL-PITS TO JAMES RIVER.

By a resolution of the General Assembly, in date of the 8th December last, the members ex officio of the Board of Public Works, were requested "to instruct the Principal Engineer to survey the country between the coal-pits on Falling creek, and James river, above Fore's fish dam, and report the nearest probable estimate of the cost of constructing a rail-road from said point on James river, to the most southern pits; together with such collateral roads as may be necessary to accommodate the coal trade: the probable quantity of coal which will be transported on said road, and the relative cost of transporting coal from said pits to the shipping at Richmond, along said rail-road and canal, and the present cost of transporting it along the present route to tide-water in Chesterfield; together with all the information relative thereto, which he may think calculated to enable the Legislature to form a full, fair and correct idea of the practicability, cost and usefulness of said road, the distance, and length of time necessary to make said road."

Pursuant to this resolution, and the instructions I received, I began the survey in December; but was interrupted by the inclemency of the weather. It was resumed and completed in January. It results from this operation, that a rail-way from the coal-pits to James river is perfectly practicable. Beginning at Stone Henge, where the most southern pits are, and pursuing a direct course almost due north, the route should meet Falling creek just at the end of the turnpike; thence it should continue up a prong of Falling creek, leading nearly in a northerly direction, up to the top of the ridge which divides Falling creek from James river. After having crossed the ridge, it should descend down a ravine east of Captain Finney's house, and strike the river a short distance below his pits.

The ground is generally favorable: the ascent up the ridge can be made without much expense, not to exceed 1¼ degree, or 115¼ feet per mile.

As to the descent, it will be 2½ degrees near the top of the ridge, and could not be reduced below this number without much expense of cutting; which is deemed unnecessary, since the return waggons will be drawn up empty with great ease, by one horse, and the loaded ones can be checked in their descent by simple mechanical means.

The distance from the farthest pits to the river is 4.95 miles. The average distance for all may be stated at 4½ miles.

The height of Falling creek at the termination of the turnpike, is about 84 feet above the pond of Bosher's dam.

The elevation of the ridge above the river is 240 feet; the highest point is 2860 yards from it, making an average declivity of 1 2-3 degree.

The line run, embraces all the pits and passes within so short a distance of each, that it will not be necessary to make any collateral road to accommodate them. The proposed route passing below all the pits, common wooden rails will answer to send the loaded waggons down to the main line.

The rail-way might consist of a single track; but most part of the route being on a slope, this would be liable to objection, unless particular regulations were adopted by the different colliers for the transportation of the coal. I have thought it, therefore, more expedient to make an estimate for a double track.

The rails should be of wood, capped with iron bars; these wooden rails being supported by blocks of stone six feet apart in the direction of the road. Stone being tolerably convenient, should be preferred to transversal wooden sleepers, which are not much cheaper than stone in the first instance, and are certainly more expensive in the end: they are, besides, objectionable on other accounts.

The expenses of the rail way would probably be as follows:

For stone sleepers, laying, gravelling, &c.	$ 7,056
For the wooden rails, all included,	9,409
For iron, 158.40 tons,	28,445
For making the road, including 12 small culverts,	5,500
Total amount,	$ 50,410
For superintendence and contingencies,	5,040
Probable cost of the rail-way,	$ 55,450

This road might easily be made in one year with a force of seventy men, including mechanics.

The road should yield 10 per cent. on the capital, in order to allow for dividend, repairs and agents, or $ 5,545.

The quantity of coal waggoned to Manchester being estimated at upwards of one million of bushels, tolls at the rate of 2-3 of a cent per bushel would produce this revenue, if the coal raised on Falling creek was brought along the proposed rail-way: the probability of its taking this route, presents itself as the next subject of enquiry.

The expense of transportation on the rail-way will depend on the power applied. It does not appear, that under present circumstances steam could be employed to advantage; horses will be found both cheaper and more convenient.

The greater ascent on the line being 1¼ degree, this will fix the load that can be transported. A horse of ordinary strength can draw up such an ascent with great ease a load of 3 tons, including the waggon, or 2¼ tons clear load of coal, which are equivalent to sixty bushels. With this load on a slope of 1¼ degree, a horse might travel at the rate of 2 miles an hour: on an acclivity of 1°, he would move at 2½ miles; on an angle of ½ degree and less, probably 4 miles an hour. The average velocity may be estimated at 3 miles an hour, and consequently since the average distance is 4½ miles, it would be performed in 1½ hour, and there would be two and a half trips made in a day, or five trips in two days.

Where the descent is 2½ degrees, the pressure downwards will be about 240 pounds; which will be perfectly under the control of a simple brake.

There being 60 bushels transported each trip, it will be 150 per day: if we allow $ 1 50 per day for horse, driver and waggon, the expense of transportation will be, 150 bushels carried for $ 1 50; which is per bushel, one cent.

At the river, the coal waggons being provided with a falling door at their bottom, the coal may be let down from them upon inclined troughs down which it will slide into boats without receiving any injury from the change of conveyance, if the descent of the troughs be properly graduated and contrived.

The coal, having been thus deposited into boats, will be brought down the canal to Richmond. At present, however, deep loaded boats cannot pass in some places of the canal: This renders transportation now more expensive than it would be, if greater loads could be brought down. In connexion with the present object, and agreeably to the intended dimensions of the canal, a proper depth should be given wherever it is deficient. The only serious difficulty that will be experienced in doing so, will be at the guard-lock below Tuckahoe creek, whose mitre sill is too high. As it would be too expensive to take up this lock, the most eligible plan will be to cut down the mitre sill as low as practicable; and if a proper depth could not be given in this way, the balance might be obtained by raising Busher's dam a few inches higher. It is presumed, however, that this last expedient will not be necessary, as boats carrying a thousand bushels of coal, if properly built, could easily pass in a depth of 30 inches, which the lowering of the mitre sill may furnish.

A boat loaded with one thousand bushels, will require a man, a boy and two small horses, or two mules. If the coal was raised fast enough, and with good management, it might perform four trips in a week; I will suppose that only three are made, allowing $ 2 50 per day for two hands, two horses and the boat. There will be one thousand bushels carried for $5 00

Which is per bushel,	0.005 or 1-2	a cent.
The unloading of the boat at the coal-yard, will be worth per bushel about	1-4	of a cent.

So, that the whole expense of transportation from the coal-pits to the Dock, will be,

On the rail-road,	1		cent.
Tolls on do		2-3	
On the canal,		1-2	
Tolls on do	1		
Unloading at the coal-yard,		1-4	
To which must be added tolls in the Dock, as now charged,		1-2	
Total amount of expenses per bushel,	3	11-12	cents.
The cost of transportation along the present route to tide water in Chesterfield, is	9		cents.

There will consequently be a clear advantage by the rail-road and canal, of 5 1-12 cents per bushel, or $ [illegible] on a million of bushels. So considerable a benefit would certainly not be neglected by the colliers, and can leave no doubt that the new route would be assumed by the coal trade. Indeed, such an improvement is now indispensable, not only to benefit, but actually to save the coal trade, which otherwise will soon be unable to compete with that of the northern States; whereas by the improvement, the Virginia coal will sell even more readily than formerly, and yield a better profit.

Having ascertained the extent of the inducements which would bring the coal down the canal, there remains to enquire into the probable advantages that the State will derive from the undertaking: but previous to this investigation, new considerations should be introduced.

The coal would probably have sought this channel ever since the completion of the canal, if there was not an obstacle at its termination. There is at present no convenient communication between the canal and the Dock, nor any accommodation for the coal at the last place; and unless these facilities were procured to the coal trade, the rail-road would be of no avail: it will, therefore, be indispensable to construct substantial locks to descend from some point near the Armory, towards the Dock. Instead, however, of descending quite into its basin, as at present, I would continue the level of Haxall's canal along the Dock as far as the creek, thus saving the expense of the two lower locks: Those that lead down from Haxall's canal, might still be used by such boats as might have occasion to pass down into the Dock.

The level of the canal thus extended being much above the Dock, the bank interposed between both would afford excellent coal-yards, from which the coal could, with great facility, be lowered into the hold of vessels without impairing its quality; and besides, this last handling is indispensable any where: So, that the discharging of the coal upon the bank, would be the only operation that might somewhat break it; but certainly, it would not half so much injure it as the jolting in waggons on the turnpike, and the unloading at the coal-yards.

The locks with intervening basins, including the condemnation of property, but dispensing with the two lower ones, would hardly cost $90,000

This work should yield a return of 8 per cent. which is $7,200 per annum.

1,000,000 of bushels of coal would produce on the canal, at the established rate of tolls, 10,000

Which is $2,800 over and above the requisite sum to cover dividends, repairs, &c.

In addition to this, some revenue would be obtained from ground rent, and from an increase of productiveness of 1,000 shares which the State owns in the Dock, and which constitute one-fourth of the whole capital subscribed.

The following is a recapitulation of the probable expenditure and revenue of the proposed improvement:

Expenditure—For making the rail-road,	$ 55,450
For locks and embankment,	90,000
	$ 145,450

Revenue—Tolls on one million of bushels of coal on the rail-road at 2-3 cent,	6,667
Tolls on the canal at 1 cent,	10,000
Tolls in the Dock at 1-2 cent, $ 5,000; one-fourth of which is	1,250
Ground rent probably,	583
Total amount,	$ 18,500

Which is 12¾ per cent. on the capital, and $ 5,755 over and above the necessary income of the improvement to meet all yearly expenses. This surplus would probably be also increased, by the additional business done at the Dock in consequence of the construction of the new locks; but, the advantages above enumerated are already sufficient to recommend the undertaking, without any accessory consideration.

In connexion with the object of this report, it should not be omitted that a rail-way has been spoken of, and even surveyed for, from the coal pits to Manchester, with the same view as here intended, of relieving the coal trade from the difficulties it now labours under. It will, therefore, be proper to enquire into the comparative merits of both routes.

The difficulties attending the construction of a rail-road from the pits to Manchester, would be greater than on the direct route to the river: There would be on that route many deep ravines to cross, and the ascents would be steeper: So, that either the expense of making the road must be considerably greater, or the loads carried smaller; and consequently, the cost of transportation higher.

In the first place, I think that a double track on that route would be more indispensable than on the shorter rail-way to the river: for, as I have stated above, each waggon on the latter might transport to the river in a day 150 bushels of coal; and, as the quantity raised per day averages about 3,300 bushels, 22 waggons would be adequate for the purpose; say 24 to allow for contingencies: The motion of this small number might easily be regulated on a road of only 4½ miles, so that they would not interfere with each other on the road: They might, for instance, be divided into three convoys: one loading, the second going to the river, and the third returning: Their meeting point might thereby be determined, and a passing place provided there. I have, however, assumed a double track as more convenient, and particularly because in this trade, economy of transportation would depend in a great measure on its regularity, which could not be established, if the chance of a single track being occasionally out of order, was suffered to interfere.

Between the coal-pits and Manchester, the road will be about 13 miles in length, and the greatest angle of ascent may be reduced to 2 degrees, without extraordinary expense. Up such an acclivity, a horse of ordinary strength would not draw more than 1½ ton clear load, or about 40 bushels of coal. The distance that a horse can conveniently travel, day after day, being about 20 miles, there would be one trip going and returning performed in 1⅓ day, and consequently 40 bushels carried in that time by each horse and waggon: the quantity raised during the same being about on an average 4,400 bushels, 110 waggons would be requisite to carry it; say in the same ratio as above, 120, to allow for casualties. It would be more difficult to place this great number of waggons, belonging to different persons, under proper regulations to prevent their interfering with each other on a single road of 13 miles in length: if they were made to set off altogether, besides the inconvenience of the plan, there would be required double the number of waggons, in order that a full convoy might be ready loaded by the return of the other. If, on the contrary, they were sent off in small convoys, which would certainly be preferred, their points of meeting would be uncertain, and consequently numerous passing places should be provided, especially on account of the acclivities and declivities of the road: if to the expenses of these turns, there be added the consideration, more probable on a long than a short road, that interruptions might be occasioned by repairs on a single rail-way, especially if made of perishable materials, the expediency of making a double track will be irrefragable.

This double rail-road passing over more difficult ground than that direct to the river, would necessarily cost more: but, in order to give it rather the advantage, I will suppose it to cost

e as the other, 4.95 : 13 :: 55,450 : $145,626,
al cost of this road.
ereon should produce 10 per cent. or $14,563,
the rate for 1,000,000 of bushels at 1½ cents per
s to transportation, allowing as before, $1 50 per
ne waggon, or $2 for 1⅓ day,
shels will be carried for $2, or
one bushel for 5 cents,
which the tolls being added, 1½

e whole cost of transportation will be 6½ cts. per bushel.
is 2½ cents more than by the rail-road and canal.

is difference leaves a considerable latitude to vary the
As, however, it results from the supposition that the
ich I consider most expedient would be carried into
I will conclude by examining the case of single
le.

k from the pits to Manchester, with passing not cost less than	$80,000
ndemnation of property, upon the most econo-	
on it should be per bushel;	ct. 0.80
ven that a whole trip of 26 miles performed in one day, instead of s, there will be 40 bushels carried for $ 1 50, or one bushel for	3.75
Making the whole expense,	4.55 cts.

A single rail-road to go to the river, would cost, in the same ratio, about	$30,000
The tolls should be per bushel,	ct. 0.30
The same speed should of course be supposed here as in the other case: there would consequently be three trips performed in one day, and 180 bushels carried for $1 50, or one bushel for	.83
To which, adding the expenses on the canal, as before,	2.25
The whole cost, under present suppositions of two single rail-ways, would be	3.38 cts.
Which is still	1.17 ct.

less than on the longer rail-way, leaving yet a considerable latitude between the two improvements.

Consequently, if the canal be made deep enough in places where it is now too shallow, and proper facilities be provided on the north side for the coal trade, there can be no inducement to undertake any other improvement on the other side: the colliers would certainly avail themselves of the advantages offered to them; and, indeed, if the advantages were equal on both sides, there cannot exist a doubt, but that the proprietors of the mines would readily and gladly choose that route, which would at the same time contribute to the welfare of their State, and to the completion of its most important improvement.

Respectfully submitted.

C. CROZET, *P. E.*

Richmond, February 6th, 1828.

REPORT

ON THE

CARTERSVILLE BRIDGE.

This bridge consisted of six arches of timber supported by five piers, and two abutments of dry masonry. One of the arches measured a span of 158 feet, the others 130 feet each; the bridge was roofed.

Early in September last, one of the smaller arches fell; and, shortly after, the large one gave way: The timbers of this were still lying in the bed of the stream, when I examined the state of the bridge, which was but one or two days after the fall of the long arch: The timbers of the first arch that fell had been brought on shore. I then thought that the bridge might be repaired and re-built for 3,000 dollars.

Since that time, I understand that the timber lying in the river has been swept away by a freshet, and that it was deemed expedient to demolish the remaining four arches. By an affidavit of Mr. Zach. Taylor, it appears that this was accordingly done, except the sheeting plank and rafters of the sixth arch, which it was found could not be removed without danger: and that the shingles, planks and rafters of the three arches demolished, and what was preserved from the two that fell in, were sold at auction; and lastly, that the flooring plank and sleepers of all the arches, except that which was carried away by the high water, have been preserved, and can be used in re-building the bridge.

In the present state of things, this business must be considered as an entirely new speculation. The decision, whether the bridge should be re-built or not, must depend on a comparative consideration of the expenditure and benefits of this work.

Of all the structure originally raised, there remain, two abutments and five piers of stone; a great part of the flooring and sleepers; part of the sixth arch yet standing: the toll-house; and a sum of $ 361 17, arising from the proceeds of the sale of some of the timber sold, as will appear from the subjoined letter.

Below the bridge there is a ferry, whose competition, (only half tolls being charged,) is unfavorable to the interest of the Bridge Company. The following comparative statement will shew, both the extent of this competition, and the actual amount of tolls received on the bridge. The tolls received were:

In 1824. At the bridge:		
Tolls collected,	$ 546 24	
Yearly subscription,	297 83	
		844 07
In 1824. At the ferry:		
Half tolls collected, $174 97½: double this for full tolls,	349 95	
Subscription,	50 00	
		399 95
		$ 1,244 02
In 1825. At the bridge:		
Tolls collected,	$ 564 19	
Subscription,	255 40	
		819 59
In 1825. At the ferry:		
Collected, $ 144 55½: double this sum as above,	289 11	
Annual subscription,	54 50	
		343 61
		$ 1,163 20

In 1826. At the bridge:		
Tolls collected,	$ 347 09	
Annual subscription,	256 00	
		603 09
In 1826. At the ferry:		
Tolls collected, $112 59½: double this sum,	225 19	
Subscription,	53 75	
		278 94
		$ 882 03

In 1827. At the bridge:		
Tolls collected in 9¾ months,	$ 273 95	
Probable tolls in 2¼ months: two thirds of $ 120, which were very nearly the receipts at the ferry, where full tolls were taken after the fall of the bridge,	80 00	
Annual subscription,	256 00	
		$ 609 95

As to the receipts at the ferry in 1827, they do not appear in any of the papers that I have seen.

The above statement shews, that the receipts at the ferry have regularly been a little under one-third of the whole amount of tolls collected, estimating those at the ferry at full rates. For this reason, I have allowed two-thirds of the tolls received at the ferry in two months and a quarter since the fall of the bridge, in order to present an estimate of the bridge tolls in 1827.

It appears also, that there has been until 1826, a gradual diminution of tolls, but that the amount was stationary during the two last years. It is not probable that it would fall below $ 610.

This amount of tolls would evidently not justify the erection of so expensive a bridge as the former: all that can be aimed at, is to render what is left productive, by adopting as cheap a plan as possible, having regard to the utility and durability of the work.

A plain bridge, supported by the piers and abutments now existing, raised a little higher, the piers by trestles, and the abutments by walling, with one trestle in each of the small intervals, and two in the larger, would probably cost,

For the trestles and sleepers,	$4,700
For the floor and railing,	1,880
Total amount,	$6,580

from which should be deducted the value of the timber saved. Not being exactly informed of the state and quantity of this timber, I can only give here an approximation of this deduction.

Of the timber saved, none can be used in the main frame of the bridge: but, great part of it will be employed in the flooring and railing; and it is safe, I think, to calculate that this, together with the value of the balance, the iron, and the amount of $361 17, for what was sold, will at least cover the whole cost of the flooring and railing, which is only $1,880
leaving at the extent an expenditure of 4,700
to be provided for.

The probable revenue of the bridge being, not from computation, but actual fact, at its minimum, $610, it is 13 per cent. on the capital to be expended, which is about what should be produced by a work of this nature.

With stone piers instead of trestles, the new expenditure would be $7,000; and the tolls would then be only about 9 per cent. of this capital; but, on the other hand, the greater permanency of the bridge, which in itself is a recommendation of much weight in favor of this plan, would reduce the repairs and contingencies so much, that 9 per cent. would probably procure a better dividend on this plan, than 13 per cent. on the other: the adoption of either of them must depend on the funds that can be appropriated to the re-building of this work.

As to the ferry, the value of its competition may be readily estimated; its last receipts being equivalent to $278 94, full tolls, which is the legal interest of $4,650, this is the present value of the ferry to the Bridge Company, were they to purchase it; though, during the existence of the bridge, it is worth far less to its proprietor.

Respectfully submitted.

C. CROZET, *P. E.*

Richmond, January 28, 1828.

REPORT

OF THE

COMMISSIONER

ON THE

KANAWHA ROAD AND NAVIGATION.

In obedience to the act of the General Assembly, of the 2d of February, 1823, I beg leave to submit the following report:

In the month of March last, I was notified of my re-appointment to the office of Commissioner on the Kanawha Road and Navigation, and at the same time was furnished with a copy of the act of the 8th of March, 1827; which, among other provisions, provides for the re-building of the bridge at the mouth of Gauley river, "upon such model as, in the opinion of the Commissioner, will combine economy with public utility;" also, authorising the removal of the toll-gates on the Kanawha turnpike road, and letting out the repairs of the road by sections, for a period not exceeding three years.

Shortly after my appointment to office, I executed my official bond, and took the oath of office as prescribed by law, and proceeded to carry into execution the provisions of the act of the 8th of March, above referred to.

I proceeded immediately to place the collection of tolls on the mountain section of the canal, the towing-path and bridge, under the provisions of the before mentioned act; and caused public notice to be given in the newspapers published in Lynchburg, Lewisburg and Charlestown, that on the 10th of May, 1827, I should attend at the mouth of Gauley, for the purpose of receiving proposals for re-building the bridge at that place; for placing in the Kanawha river a suitable number of buoys and ring-bolts, and for keeping in good repair the turnpike road from its western termination to Lewisburg, for the space of three years; and that I would attend at Lewisburg on the 15th of the same month, for the purpose of receiving proposals for keeping in good repair for three years, the turnpike road from that place to Covington, its eastern termination.

The meetings at the places appointed were well attended, and a fair competition produced. Two plans were submitted; the one on the plan of the former bridge at that place, which was destroyed by fire, and the other, a straight, open top bridge, supported by six stone piers. Most of the propositions were for building on the original plan, and they varied from $11,000 to $15,750. Only one proposition was submitted for building an open top bridge, and that was made by Messrs. Shields and Blair, at the sum of $6,467. I concluded to accept the latter proposition, believing, that by so doing, I should best "combine economy with public utility." In coming to this determination, I am aware that I stand opposed to many respectable gentlemen of that country, for whose opinions I entertain the highest respect. Their objections seem to be founded on a belief, that so many piers placed transversely in the stream, will obstruct the passage of drift and floating timbers, and thereby endanger the safety of the bridge. To this objection, urged with much apparent plausibility, I gave due consideration; but was finally brought to the conclusion, that the dangers that seem to be apprehended will be productive of no public injury, and will never result in the anticipated disaster. There will be an open space between the pillars of upwards of sixty feet. The piers are built on a solid rock foundation, and with stone of the best quality, and of uncommon length and breadth. The space between the piers will be amply sufficient to let the drift pass, and the falls, a short distance above the bridge, will prevent the drift from coming to the bridge in a compact body; and if it should be the case, the current in the river will be sufficiently strong to force the drift between the pillars. There are many other considerations that might be urged in favor of the plan adopted. Bridges built upon the plan of the one destroyed by fire, to become valuable, must be executed with more skill than falls to the lot of most of the workmen of our country. Moore, the former contractor for the bridges at Gauley and Greenbrier, was possessed of uncommon skill, and executed his work with great fidelity. An effort was made to procure his services, but without success; and, if his services could have been procured, I should have doubted much the propriety of placing at that place another covered bridge; for, there is at that place a conflict of interest between the bridges and ferries, which would always render a bridge composed of much combustible matter, unsafe. These, with other considerations, and the great difference in price, brought me to the determination before mentioned. The contractors entered into bond, with ample security, in which they covenanted to complete the bridge on or before the 15th day of November last. In this they have failed. At the period aforesaid, I visited that place and inspected the works. They then had two piers above the water, but not complete, and materials nearly sufficient to complete the work, and may finish it in the course of next summer. Major John Staples, my Engineer, has been regular in his attendance, watching over the execution of the work, and what has been done appears to be executed in a strong, workman-like manner, possessing great strength and durability.

There were various propositions for placing in the Kanawha river, a suitable number of buoys and ring-bolts. Samuel Hannah was the lowest bidder, and became the contractor at $ 2 for each ring-bolt, and at $ 3 50 for each buoy. When I was on the Kanawha river in November last, he had placed thirty-two buoys and twenty-five ring bolts in the river, under the directions of Major Staples, and was prepared to put in the balance, but a rise of the water and the coldness of the weather will delay its completion until next summer. I settled with him for all that had been placed in the river, amounting to $ 162, and paid him by a draft on the Second Auditor.

There were a number of proposals handed in, for keeping in repair the turnpike road from its western termination to Lewisburg: They varied from $ 1,000 to $ 1,500 per annum. Francis Carrol was the lowest bidder. He has considerable experience in work of that kind, and is a faithful contractor. The contract was given to him; whereupon, he entered into bond with good security, with suitable conditions and specifications.

The repairs of the other sections of the road from Lewisburg to Covington, were let at Lewisburg on the 15th day of May. There were numerous proposals put in, varying from $ 600 to $ 313 17. James Knox was the lowest bidder, and became the contractor for the last mentioned sum; whereupon, he entered into bond with sufficient security, conditioned as the law directs.

The bonds taken, in pursuance of the contracts aforesaid, re all filed in the Second Auditor's office, and are believed to ntain conditions and specifications sufficient to protect the lic interest.

On the completion of the mountain section of the canal, I embraced the first opportunity of reducing the contingent expenses on this line of improvement as far as was practicable, by discharging such of the Engineers as were not wanting. On the 8th day of February last, I settled with Francis F. Purcell, one of the Engineers; ascertained the balance due to him, which was paid by a draft on the Second Auditor, and discontinued his services.

On the 23d of the same month, I came to a settlement with Col. William Paxton, who had been acting as Engineer; ascertained the balance due him; paid him by a draft on the Second Auditor, and discontinued his services.

On the 5th day of April, I discontinued the services of Maj. James C. Warren, who had been acting as Engineer on the western end of the line, at a salary of $ 1000 per annum; came to a settlement with him, and paid the balance due him by a draft on the Second Auditor.

I continued Maj. Staples as Engineer, at a reduction of salary from 1200 to $ 800, and he is the only officer of that description on this line of improvement under my direction.

In my former report, I mentioned that $ 5000 found to be due Messrs. Jordan and Irvine, under their contract on the mountain section of the canal, had been withheld until they should make sufficiently tight a part of their line of the improvement. The hard weather in the winter delayed the completion of this work, until some time in the month of March, when the collection of tolls commenced. The payment of this sum was retained until the month of May, when it was considered that their works had assumed a reasonable degree of tightness, and was then paid by a draft on the Second Auditor.

On the completion of the canal at the mountain section, I apprehended that parts of the work would give way, and that it would be important to have at command some hands that could repair the breaches before they would become extensive, and when not engaged in repairing breaches, they might be advantageously employed in strengthening parts of the canal that might require it. This idea I suggested to the President and Directors of the James River Company. They took the subject under their consideration, and hired six negro men, and employed an overseer and sent them up. They have been found very useful in the course of the year Several small breaches have made their appearance, but by having hands at command, they have been speedily stopped without interrupting the navigation. The most material defects in these works have been found in that part which lies in the county of Bedford, and which was contracted for by Messrs. Lyman and Sandford Brown: their embankments have given way in several places, and when exposed to inspection, the puddle appears to be too thin, and the embankment made principally of sand; but the most material deception is found in their locks. Early this spring, their lower cut stone locks and the double wooden lock communicating with the river gave way, and leaked so badly that they could not be used. A considerable portion of the stone in the facing of the cut stone lock, was found too soft to resist the frosts of winter; and instead of being bedded in Roman cement six inches, they were only pointed, and the backing behind the cut stone wall was filled with sand instead of grout, which was washed out as soon as the water got to it. These locks were propped up, so that they could be used whilst preparations were making for re-building them. The wooden lock, if possible, was more faithlessly made: the lining was so badly put on, that it leaked in every part; the filling between the rough stone wall and the chamber of the lock, being composed of sand, was soon washed out and the backing wall much injured: this was also propped, so that it could be used by ascending boats. The appearance of these locks was good, when the work was received. The cut stone lock drew a compliment from men possessing more skill than I can boast of. As to the wooden lock, I doubted much, and refused to receive it until the Engineers who superintended the work granted their certificate, that in their opinion it ought to be received: that certificate will be found in the office of the Second Auditor attached to the account settled with the Browns. If the Messrs. Browns could be reached, the Commonwealth would have a well-founded claim against them, for considerable damages, for the frauds practised in the execution of their contract. When the defect in this work was discovered, I communicated with the President and Directors of the James River Company as to the best and most economical way for making the repairs, and they concurred with me in the opinion, that it would be best to employ the hands then on the canal, in part, hire some additional labourers by the day or month, and employ a suitable number of stone-cutters and lock-builders to carry on the work: this was accordingly done; good stone, in sufficient quantity, was procured to re-place all that was defective; lime and Roman cement was obtained, and the lock taken down and re-there will be found nothing that is flattering; and by some it may be considered as a solemn admonition to the State, to proceed no farther in the prosecution of public improvements which are found to be so unproductive. This mode of reasoning may have its weight with some, but I trust there are but few who are disposed to act upon this limited and contracted view of the subject. James river may be properly regarded as the main artery of the State, and consequently whatever affects it either injuriously or beneficially, affects in the same manner the State itself. The improvements which have been made are isolated, and in their present disunited state, accomplish but little. It is true, that the canal at the mountain has overcome one of the greatest and most dangerous obstacles in the navigation of that river; but it is equally true, that there are difficulties both above and below that point, which are in themselves sufficient to destroy the useful purposes which that beautiful river was designed to answer. This river, from the city of Richmond, extending to the west, waters the finest part of the United States; throughout its extensive course, the soil is good, the climate temperate, and the waters inferior to none in the world. These are nature's bounteous gifts: but to make them extensively beneficial and useful, and productive of the great blessings which they were designed to bestow, the united exertions of the State are necessary. Individual means cannot accomplish a work of this magnitude, but the State would find no difficulty in its accomplishment. It is true, that the improvements that have been made on the river. have cost a large sum of money; have drawn no additional trade to the river, and have, consequently, been unproductive in the way of revenue But it should be borne in mind, that when this improvement was commenced, we were greatly wanting in experience on the subject; we were unacquainted with the prices and value of that kind of work, nor had we skill or experience to guide us in the best practicable mode of improvement. From what has been done, much information and experience have been derived, which will be found useful in the farther improvement of this and other water courses in our State. And I believe I should hazard nothing in saying, that the same kind of work could now be better done for one third less than we have paid for it. It is not my province, nor can I pretend to have the ability, to direct the Legislature of my State, as to the kind of improvement that would be best. Were I to express an opinion on this important subject, it would be, that a mixed improvement would be best; in some places, short canals; in others, dams, and in others, sluices would be found to answer. In making these improvements, regard should be had to a more perfect state of improvement, should the interest and wants of the country require it. I can have no hesitation in saying, that something should be immediately done, and that the whole energies of the State should be directed to its speedy accomplishment. At present, the State of Virginia is retrograding rapidly, and has been so for the last seven years. Other States have far outstripped her in public improvements, and are now reaping the rich harvests from those improvements; and, unless the Legislature will interpose, by its energy and wisdom, to arrest this downward march, Virginia, whose resources are ample, and whose natural advantages are incalculable, will be thrown into the back-ground, and, indeed, be parcelled out to our sister States; for, already has an incorporated company in the town of Baltimore, made application, by way of rail-roads, for one-third of the commerce of the State, which has been granted to them in part: and such are the difficulties experienced by our brethren in the western parts of the State, in reaching our seaports, and such has been the tardiness with which the Legislature has moved on this subject, that many of them are prepared to accept this deleterious draught, in order to obtain an outlet and market for their surplus produce, the profits of which will centre in a sister State. If we have not the means by which we can accomplish this object now, permit me to ask, when we shall be in a better condition? Is there any thing which we can rationally anticipate, that will render us more able at a future day? Are we not daily losing our physical strength and wealth, while our sister States are becoming more opulent and strong? If this be true, and if the means to stop this downward course be within our reach, we shall be inexcusable if we do not use them. I am persuaded that a short examination will satisfy the most incredulous, that the State has at command, resources more than sufficient to answer the purpose. At this time the fund for internal improvement holds stock to an amount exceeding one and an half million of dollars, consisting mostly of bank stock. At present, this stock does not yield more than 5 per cent. per annum, and if the banks were required, at this time, to redeem their stock, they would fall short at least 25 per cent. Yet, notwithstanding, this stock brings its par value. Then, let the government dispose of this stock, and invest the proceeds in the improvement of the road and river, and substitute the income arising from the improvement, for the income arising from the stock. I have no doubt, but in a few years, this would be found to be a more profitable investment than the present; and, in this way, both principal and income would be made to advance the great object for which the fund was created. If this plan should be objectionable, the State can obtain on loan, money to any amount, redeemable at pleasure, and the improvements can be made to pay the interest.

I may be told, that the improvements do not pay the interest upon the money expended. In the present state of the improvement, a large portion of the country sends its produce to market by land, and other parts that have neither navigation nor roads send none. But, if the river was made conveniently navigable for boats at all seasons of the year, the town of Covington would become a place of extensive deposit. The rich counties of Monroe, Greenbrier, Bath and others, would crowd the canal with their produce: the fertile and productive vallies of New river and Greenbrier, would send hemp, flour and tobacco in abundance, whereas at present they send nothing to market except in waggons, and the expenses of such a mode of transportation leave so little for profit, that there is nothing to stimulate the husbandman to industry. In addition to this, there are six Iron Works on the waters of James river, which will produce upwards of five thousand tons of metal per annum; all of which would contribute to the revenue, provided you furnish them with navigation.

If the navigation were made good the whole distance, the tolls might be increased, and all the lands within the influence of the trade would be increased in value, and might be re-assessed, and in this way the government might acquire ample means, and while it would extract the means, it would make the country rich and happy. The improvement of the river would furnish numerous valuable sites for water-works, which would in a short time contribute much towards the improvement of the country; for, I think it may be safely asserted, that the time has arrived when we should husband well our own resources, and depend as little as possible upon supplies from abroad. The commercial regulations of all Europe are such, that we can find there a market, but for a small portion of our surplus produce, and that at reduced prices: this being the case, we cannot purchase our supplies from them, and the same remark will apply with equal force to our sister States.

Under these circumstances, a due regard for our own interest, points out the necessity of becoming our own manufacturers, and by a suitable division of labour, create a market at home which we cannot find abroad. This course judiciously pursued, will in time make us a prosperous, rich and happy people. I hope the time is not distant, when we shall see our water courses improved, and the banks of our canals and rivers lined with manufacturing establishments, and those rivers and canals proudly floating their fabrics to market.

In the few remarks which I have ventured to make in relation to the improvement of James river, I may have exposed myself to the charge of being sectional in my views and feelings. But, I disclaim being actuated by any such views or feelings, and shall rejoice at seeing all of our rivers improved. But, as James river has been improved in parts, and considerable sums have been expended on isolated improvements, which cannot be extensively useful to the trade of the river, or productive in the way of tolls, until the whole is improved, it becomes the true interest of the State that this improvement should be completed as soon as possible; and if the united energies of the State were directed to this object, two years would be sufficient for its completion.

◆

THE KANAWHA TURNPIKE ROAD.

The annexed statement marked B. shews the amount of tolls collected from the 15th day of November, 1826, to the 15th day of November, 1827; also, an account of the contingent expenses, and the expenses of repairs for the same period of time, as fixed by the new contract.

The regular collection of tolls on this road continues to be interrupted, owing in part to the county court of Greenbrier continuing open parts of the old State road, where it approaches near the turnpike. Two of the toll-gates have been removed in the course of the last summer. The one which was formerly situated at James Kendall's, has been removed to John A. Reid's, at the foot of the Alleghany, and said Reid appointed the receiver of tolls: the other, which was formerly situated at Metzaker's, has been removed to Overton Garland's, at the Dog wood gap, and said Garland appointed receiver of tolls. Both these gate-keepers have given bonds, with good security, as the law directs; and the situations in both cases are regarded as more favorable for the collection of tolls.

The collection of tolls at the Gauley bridge or ferry, has, to some extent, been defeated by the establishment of a ferry across New river, about one mile east of the mouth of Gauley; by crossing there, the traveller saves the toll on one section of the road which he has used. To remedy this, the toll-gate which is now at the mouth of Gauley, should be removed about two or three miles to the east, to the point of Gauley mountain; and there the same rate of tolls should be demanded that are now collected at Gauley; and the bridge and ferry at that place made free. In order to accomplish this object, Legislative aid is necessary: it is also desirable, that the tariff of tolls on the road and bridges, should be revised and made more explicit; and should say, whether persons riding in stages, carriages, or waggons and carts, are exempt from the payment of *tolls or not*. Much inconvenience is experienced by the poorer class of people in going to and from mills. Would it not be advisable to exempt from the payment of tolls, all persons going to, and returning from mills? With a view to these objects, I have annexed a skeleton of a bill, marked C. which will be subject to such alterations as the Legislature may think proper to make.

There are three framed bridges over Dunlap's creek, built on the arch and ring-post plan: the workmanship of all of them has been most shamefully executed. One of them was taken down and re-built by my predecessor, but they are all now going fast to ruin: the arches have all given way, and the roof of one fallen off. In order to stop this rapid approach to ruin, I have entered into a contract with James Knox, to place under the centre of each of these bridges, a stone pier of suitable dimensions. The contract will be found in the office of the Second Auditor. Charles Callahan was the contractor for building the lower bridge on Dunlap's creek, which had been settled and paid for: he had also a subsequent contract for covering a bridge, which remained to be settled: in this settlement, I made several deductions on account of defective work in his first contract, which reduced the balance due him to $ 62 50, which was paid by a draft on the Second Auditor; and it may become questionable whether the Commonwealth should not proceed against these contractors for damages. This road is in excellent repair, and is admired and praised by every man who travels it, and is becoming daily more and more useful, and wants nothing but an extension on the west to the Ohio, and on the east to the City of Richmond, to make it the most public road in the State; and it is hoped that the time has arrived when the Legislature will think it expedient to complete this important line of improvement. As soon as this line of improvement shall be completed, all the travelling between the east and west must take that direction. The distance will be shortened to most parts of the western country, something like one hundred miles, and this would be a better road than any leading from the east to the west, the Cumberland road not excepted; and those who travel by way of steam boats and stages, would leave the Ohio where this road would strike, and would take the stage on to Richmond, where they would again meet with a steam boat conveyance: this would bring the steam boat conveyance between the east and west, nearer together than at any other point, and would ensure it a preference. The political advantages that would result from this free and convenient intercourse between the east and west, will not be inconsiderable, and will add additional force to the propriety of perfecting this scheme. As to the pecuniary advantages, I beg leave to say, that I have no doubt if this road is completed, but what the income in the way of tolls, would more than pay the legal interest on the cost; that it would impart an additional value to all the lands near the road; that it would ensure a good market for all the surplus produce within many miles of the road, and would lead to the settlement of extensive districts of country, that are now unpeopled and unproductive. It would be instrumental in bringing thousands of persons from the shores of the Mississippi, to spend their summers at the watering places in the western parts of the State, and in that way raise a market for a large portion of the produce of that country. The present time is favorable to the prosecution of a work of this kind; provisions and labour are cheap, and the work can be executed on terms advantageous to the State. Delays on this subject are attended with most fatal consequences; for, while we are hesitating and deliberating, other States and bodies corporate are acting, and that in such a way as to draw on intercourse, population and wealth into other States; and when they shall have accomplished this object, it will require no ordinary effort on our part to produce a re-action favorable to the interest of our own State; and in this way the future growth and prosperity of the State may be effectually retarded. This is a time of momentous and awful responsibility; but, confident as I am, of the wisdom and patriotism of the Legislature, I am sure it will be met as becomes statesmen to meet it, who look beyond the immediate and temporary consequences of their measures; who look to the great and lasting interests of the State in years to come. The propriety of this measure must be admitted by all, and the only enquiry that remains to be answered, is, have we the means? And, upon this branch of the subject, I think there can be no doubt. I think I may safely say, that two hundred thousand dollars of bank stock belonging to the Fund for Internal Improvement, or the Literary Fund, might be put into the market and sold, for a sum sufficient to accomplish this valuable purpose, and the income arising from the road will be more productive to either of the Funds, than that amount of bank stock ever has been. If this mode of raising money should be objected to, there can be no difficulty in the State's borrowing the money, redeemable at pleasure, and the income arising from the road would be more than adequate to meet the interest of the debt thus created; and if a further sum should be wanted, all the lands within five miles of the road will be increased in value; they might be re-assessed, and a reasonable per centage imposed upon the increased value, to go in aid of the road fund. The people will approve of such a plan, and applaud the wisdom of the Legislature that sanctions it; for, while you impose upon them a small burden, you furnish them with means and facilities of paying a large one. The next enquiry to be made is, as to the direction that should be given to this improvement, if made; and upon this much will depend. This road, if made, should be regarded as a State road, passing nearly through the centre of the State, from east to west, and opening a communication between the Metropolis of this and the western States. Such a road should be exclusively the property of the State, and should pass as near upon a direct line, as suitable ground will permit, allowing only a small departure from the direct line, in order to pass by courthouses and commercial towns; but, even this should not be indulged in extensively. This road, if made in a direct line, will shorten the distance between the City of Richmond and the Ohio, about one hundred miles. This saving in distance would give it a decided preference over all other roads leading in that direction, and nothing should be done in any way calculated to destroy that preference; and a departure from the direct line would produce that effect by increasing the distance, and augmenting the expenses of travelling through the State. As to the western end of the road, commencing at the western end of the turnpike, there can be but little difference of opinion as to its location. It should pass by the salt works, and through Charleston, and cross the river at that place, or pass some miles below the mouth of Elk river, and then cross Kanawha: in making this end of the road, no serious difficulties will be found to exist; the country being generally favorable to the construction of roads. The most expensive part of the work will be bridges across ravines, over which the road must pass; but the country abounds in fine stone for building abutments or culverts.

As to the eastern end of the road, commencing at Covington, there will be found to be a conflict of interest: by some it will be contended, that the road should pursue the valley of Jackson river, to the mouth of the Cow-pasture, and then leave the river, and cross the north mountain at Black's gap; and by others, that the road should continue down the river, in a direction for Lynchburg. In the view that I have taken of the country between Covington and Lexington in Rockbridge, I am inclined to think that the road should not touch the river after it leaves Covington, but should take the south side of the mountain, until it reaches Miller's gap, and from that to Lexington, which will be found to be from 35 to 40 miles. This is the best gap to cross the North mountain at, and the road being once made on the side of the mountain, would be permanent. But, if the road goes down the river, the river must be frequently crossed, and that with expensive bridges; the road will be frequently inundated and destroyed, and in many places the rocks make down so close to the river, that to pass them will be attended with great difficulty and expense, and in pursuing this route the distance will be increased. These observations are made, without the more accurate information to be derived from the aid of levelling or measuring instruments. At Lexington, the route which I propose would cross the main valley road; and from that to Richmond, in a direct line, does not exceed one hundred miles. The Blue Ridge will present no serious obstacles to the road, in crossing it; and from thence to James river, though the country is hilly, a good road may without difficulty be obtained. James river should be crossed at the Swift islands, where there is a fine situation for a bridge: from thence to New Canton, the country is favorable to the construction of a good road, and at a small expense: from New Canton to Richmond, by the way of Cartersville, the country will admit of the construction of a most excellent road. This will be the shortest route, and I think most useful to individuals, and beneficial to the State, and can be constructed at the least expense. I am aware, that efforts will be made to turn this road to Staunton and to Lynchburg. As to Staunton, that route will increase the distance at least fifty miles. From that place to Scottsville, on James river, there is a turnpike road already, and if a communication with this road is wished, that object will be effected by an extension of the Staunton turnpike six miles, on the south of James river, where it will intersect the State road, and give an opportunity to persons of selecting the road they may wish to travel. As to Lynchburg, the same objection will arise, namely, an increase of distance: it will be fully as much increased as on the Staunton route. From Lexington to Lynchburg, the distance is supposed to be about 40 miles, and it is proposed to bring this road over a hilly country, from Lexington to the upper end of the mountain section of the James River canal. Through this country, a good road may be had; and it is proposed to widen the towing path on this section of the canal, so as to make it a suitable road for waggons and other carriages, not less than eighteen feet wide. Many who have decided in favour of this measure, have not, I presume, reckoned the cost attending its execution. The proposed plan, as I understand it, is to place in the canal a perpendicular stone wall, the whole length of the canal, which may be estimated at seven and one-fourth miles: this wall must commence at or below the bottom of the canal, and to sustain the embankment that is intended to be placed behind, it will require to be made not less than four feet wide at bottom, battered to two feet at top, and may be estimated at eight feet high. The space between the wall and towing-path, must be filled with earth or gravel, so as to give eight feet additional width at top, and the towing-path will then require a substantial hand-rail on each side, in order to make it safe for carriages and horses.

The aggregate cost of converting the towing-path into a travelling road, 7¼ miles, may be estimated as follows:

36,688 perches of stone wall, (under the canal contract $1 25 per perch was paid for this kind of wall,) it may be put down at $1 per perch,	$36,688 00
44,854 cubic yards of filling behind the stone wall, to widen the towing-path: the canal price was 20 cents; it may be put down at 15 cents,	6,728 10
30,480 yards hand-railing, at 15 cents per yard,	4,572 00
Probable cost of making road 7¼ miles,	$47,988 10

The remainder of the distance from the canal to Lynchburg, may be estimated at the ordinary expense of making roads through mountainous and hilly countries. But, as there is a company incorporated for making this road, it might be left for the present in the hands of that company, and they will no doubt make the road, if the trade and intercourse between these two places will warrant the expenditure.

If this road is made, the whole line should be in the hands of the State, and should be placed on the most eligible ground, and made as direct as possible: if that should be done, the towns and country will soon accommodate themselves to the road, and make as many lateral communications into it, as their interest and wants may require; and in a few years we shall witness the gratifying spectacle of seeing this road lined with towns and buildings, from the Metropolis of the east, to the shores of the Ohio in the west.

If the Legislature should determine not to extend this line of improvement on State account, a part of it can be let out to individuals, who will commence on the western end of the present turnpike, and make the road by sections, under the direction of your commissioner, upon your granting them the privilege of putting up a toll-gate, and collecting the same rate of tolls there, that are collected at the gates upon the turnpike road. The paper marked D. hereto annexed, contains the proposition of A. Stockton, to make the first section of the road, and I do not doubt, but several other sections could be made in the same way, if the Legislature will grant the privilege. I should regret and feel mortified to see the State of Virginia reduced to this humiliating spectacle. But, if the Legislature have come to the determination not to extend the patronage of the government to the improvement of the country, I trust they will so declare it, and permit individuals to go on and do what they can. These improvements are demanded by so many considerations of public and private interest, that they will be acceptable to the country through which they will pass, on any terms they can get them.

◆

KANAWHA RIVER.

On the 24th of October, 1823, William Epley and William Morrison entered into a contract for the improvement of this river from its confluence with the Ohio, to the mouth of Slaughter's creek. In the specifications which form the basis of the contract, it is stated that "sluices are to be made in all the shallow places and shoals, three feet three inches deep, in parts at lowest water mark. The standard of lowest water mark is to be established by Hugh P. Taylor, the Engineer of the Kanawha Road and River, or his successor in office, with the aid of a levelling instrument, having a reference to the notes of the levelling and survey of said river, by the late Thomas Moore, Esq. of Virginia, and his assistants in 1819, and to the standard of low water established at Elk and Tyler's shoals, and at the mouth of Coal river, by said Taylor, Engineer, in October, 1823.

"All these improvements are to be completed within four years from this date, and sooner if conveniently possible.

"These improvements are to be made in all respects according to law. The contract and the law are to be solely construed in all cases by the said Commissioner and Engineer, or by either in the other's absence.

"The whole of the work to be done in the most permanent workman-like manner, to be judged as aforesaid.

"And for and in consideration thereof, the said Commissioner hereby binds himself as such, and his legal successor for the time being, on behalf, and in the name of the James River Company, to pay unto the said Epley and Morrison, the gross sum of forty-one thousand one hundred and thirty-two dollars, to be paid in the following manner:

To be paid in advance on entering into bond,		$4,000
When the 79th, 78th, 77th and 76th miles shall have been completed and received, there shall be paid	4,200	
When the 75th, 74th and 73d shall be completed,	3,500	
		7,700
When the 72d and 71st miles shall be completed,		4,000
When the 62d mile, including Red House shoals, shall be completed,		10,000
When the 56th and 55th shall be completed,		1,400
When the 52d mile shall be completed,		4,000
When the 46th, 45th, 44th and 43d miles shall be completed,		2,800
When the 40th mile shall be completed,		2,500
When the 39th and 38th miles shall be completed,		2,000
When the 27th and 24th miles shall be completed,		2,732

Brought forward,		$41,132 00
Payments, viz:		
Advanced,	4,000 00	
Paid in November, 1824, for 79th, 78th, 77th and 76th miles,	3,570 00	
Paid in October and December, 1825, for 75th, 74th and 73d miles,	2,975 00	
Paid in February, 1826, for 72d and 71st miles,	3,400 00	
Paid in October, 1826, for 62d, 56th, 55th, 53d and 52d miles,	13,090 00	
Paid in August, 1827, for 46th, 45th, 44th and 43d miles,	2,380 00	
Paid in November, 1827, for 40th, 39th, 38th, 27th and 24th miles,	5,548 20	
		34,963 20
Retained for the completion of the contract,		$6,168 80

About the aforesaid time, David Smiley made a similar contract, to improve the upper part of the river, from Slaughter's creek to the Falls of the Great Kanawha; that contract was in part abandoned, in pursuance of an act of Assembly, and an extension of the turnpike road substituted for the intended improvement on the river. The part of Smiley's contract that remained, amounted to $6,017 15

Payments:		
Paid on 21st and 20th miles,	900 00	
Paid on 19th mile,	700 00	
Paid on 16th mile,	1,500 00	
	3,100 00	
Off 15 per cent.	465 00	
	2,635 00	
Paid in advance upon the contract,	1,500 00	
Paid November, 1827,	979 58	
		5,114 58
Retained for the completion of the contract,		$902 57

David Smiley had also a contract for the improvement of Elk shoals, which has been settled and paid for.

About the 1st of October last, I was notified by the contractors Epley & Morrison and David Smiley, that they had completed their contracts, and were ready to deliver their works. I reached that country about the 1st of November; but, before I reached there, the water in the river had risen from the falls of rain in the month of October. But, previous to my arrival, Major John Staples, my Engineer, had examined the river, and was prepared to make to me the annexed report, marked E., which I beg leave to refer to. I proceeded down the river as far as the mouth of Coal river, in company with Major Staples, with a view of examining the river and the bench marks spoken of in the aforesaid contract, and ascertaining, as far as was in my power, the effect the improvement had had on the navigation of that river. I found the country labouring under a considerable degree of excitement, produced by the apprehension that an immediate collection of tolls would take place on the trade of the river, and many were prepared to declare, that the low water in the river the last summer, was only ordinary low water, and they asserted in general, that the navigation of the river was injured by the improvement; that the Commonwealth had failed to fulfil its contract; for, that the conditions on the part of the Commonwealth, were conditions precedent, and should have been complied with before any tolls could of right have been demanded. And further, they allege that the tolls are too high for the sum expended, and if their collections were then enforced, they would endeavour to make it a judicial question. I conversed with several respectable and intelligent gentlemen of that country, who informed me that it was their intention to make an application to the Legislature for a reduction of the tolls, and wished the subject to go before that body free of prejudice; in short, they shewed me their memorial, as prepared by a committee of gentlemen in Charleston.

In the adjustment of this subject, several difficulties seem to present themselves: and first, as to the contractors.

In the survey made by Thomas Moore, Esq. in 1819, he only made one bench mark on the river, and that on the bank of the Ohio, at the mouth of the river: at that point, the water in the Kanawha is so much influenced by the state of the water in the Ohio, that nothing conclusive can be determined on as to the water in the Kanawha; in conseq
disposed to put that bench mark out of

rk at the mouth of Coal, Col. Thompson shewed on a tree, which he always understood was made . Taylor, Esq. at the time of making the aforesaid s. Upon trying that bench mark with the other bench that are stationary, there appears to be upwards of two ifference; from which I conclude there was either a mis- or the instrument was not good, and therefore should be relied on. The bench mark at Tyler, being made on a at the water's edge, seems to be the only one that should an influence on these contracts.

hese bench marks were given to the contractors to govern in the execution of the work undertaken by them, and presumed was then considered as ordinary low water, and settle the question as to them. As to David Smiley's tract, if 11 inches be added to the water found in his sluices, will still be a deficiency of from 4 to 8 inches in depth; n Epley & Morrison's contract, if 11 inches be added ter found in their sluices, there will still be a defi- bout 6 inches in many places.

be seen from the report of Maj. Staples, that the deficiency is in the work done in previous years, and has been received and paid for, and may have filled up that time. How far these contractors are bound to abide st measurement, and to deepen the sluices that have been received and paid for, is a question which must be decided by a competent tribunal.

These contracts contain covenants that do not seem to harmonize. In one part reference is made to the survey made by Thomas Moore, Esq., by which it would seem, it was intended that the improvement should be made at the places and in the manner he recommended. From his notes it will be seen, that he does not recommend any thing to be done below the 79th mile; but the contract contains a covenant, that the river from the mouth shall be improved according to law; that is, it shall be made navigable for boats drawing three feet three inches in low water. With a view to obtain that object, considerable work has been done below the 79th mile, which is claimed by Epley and Morrison as extra work, for which they demand to be paid: an account for which is hereto annexed, marked F. During a part of the last summer and autumn, the Kanawha river was uncommonly low, and if it is considered, that the law authorising the improvement contains a covenant on the part of the Commonwealth, that in the lowest water, sluices shall be made in all the shoals forty feet wide and three feet and three inches deep, this matter must remain open; for, low as the water was last summer, it may be still lower, and it is now exceedingly doubtful whether, in such a summer as the last, there could be a sufficiency of water commanded to fill sluices of these dimensions. This was found to be the case last summer, in part of the river under Smiley's contract. To remedy this, would be attended with an expense greatly exceeding the value of the object to be attained; for, to accomplish it, the river would have to be reduced to an inclined plain.

It is presumed, the Legislature only intended to make the sluices so as to command the water in the river; and three feet three inches deep, when there was a sufficiency of water for that purpose in the river.

I have no doubt, but that the low water navigation of the river has been improved by the work done, and perhaps is nearly as good as it can be made by sluicing. It is complained of on the part of the people of that country, that the sluices have received an unfavorable direction. This may be the case in some instances, but those that are most complained of, are those that angle the stream, and it is said that when there is a small rise in the water, the boats are liable to be driven on the dams and wing-walls. This may be prevented by a moderate degree of exertion on the part of the waterman; and this objection will in a great measure be removed, as soon as there is a sufficient number of buoys and ring-bolts placed on these embankments: this direction has been given to some of the sluices, with a view of checking the velocity of the current, where the shoal is lengthy, and the fall considerable, and thereby aid the up-stream navigation.

How far it may be expedient to reduce the rate of toll on salt, will be with the Legislature to decide. It is, however, certain, the toll bears a heavy proportion to the value of the article, and some modification, reconciling, as far as possible, all these difficulties, would be desirable.

A settlement was made with Epley & Morrison, for the work contained in their contract, and all paid for by a draft on the Second Auditor, except 15 per cent. which has been retained for a full settlement, amounting to $ 6,160.

A settlement was also made with David Smiley, for all the work contained in his contract, except 15 per cent. retained for the full settlement of the contract, amounting to $ 902 57.

A statement of the above two accounts will be found in a preceding part of this report.

Upon a full consideration of this subject, as it related to the contractors, the navigation and the law, I determined to submit the whole subject to the Legislature. If an attempt had been made to collect the tolls, it would have been unavailing, and would have been opposed to public opinion; and the law is not sufficient to enforce it. To remedy this defect, I have annexed the skeleton of a bill, marked G., which I beg leave, with all deference, to submit to the examination and revision of the Legislature.

Col. Philip R. Thompson was the contractor for the improvement of Tyler shoal; that was considered to have been completed in November, 1823, as appears from a receipt granted by Hugh P. Taylor, then acting as Engineer, a copy of which is hereto annexed, marked H. Upon examining that sluice last summer, it was found, in most respects, to be far short of the contract.

In September, 1824, Colonel Anderson obtained from Col. Thompson, an obligation, saying, "And whereas, something more may appear necessary to be done to complete the sluices in the said shoals, and the said commissioner has not received them, I still consider the said contracts in full force, and binding on me to comply with its requisition.

"Signed, P. R. Thompson."

On mentioning to Colonel Thompson the deficiency in this work, he shewed great solicitude to redeem all the obligations contained in his contract, and went to work again, and did considerable work, and still his work does not come up to his contract. But, it is believed, that the work that he has done, exceeds the value of what he has received.

Annexed is a list of drafts drawn on the Second Auditor, and chargeable on the loan of $40,000, which are contained in the paper marked I.

The annexed paper, marked J. contains an estimate of the probable sums necessary to complete the contracts now entered into, and the amount claimed on sundry accounts.

All of which is most respectfully submitted to the General Assembly.

DAVID S. GARLAND,
Comm'r on the Kanawha Road and Navigation.

A.

ESTIMATE OF RECEIPTS

On the Mountain Section of the James River Canal, from those that are Permanent,

PERMANENT EXPENSES.

To James Ware, receiver of tolls, his salary and two hands, who attend as lock-keepers, from March 1, to Nov'r 15, 1827, at $ 1000 per annum,	$ 708 33	
To Thomas W. Glass and Roderick Waugh, lock-keepers, each of whom furnishes a hand, who acts as assistant lock-keepers, for services and hand-hire, from March 1, to November 15, 1827, at $ 350 per annum, each,	495 83	
		*1,204 16

CONTINGENT EXPENSES, (*not likely to happen again.*)

To this sum expended in taking down and re-building one of the cut-stone locks, and repairing the wooden locks, which includes wages to stone-cutters, lock-builders, masons, and hand-hire; also waggonage and lime, and provisions for the hands thus employed; also provisions and clothing for the year, for the six hands hired by the James River Company,	1,906 21

---

[*] In addition to the above mentioned expenses, there are the hire of an overseer, ($ 250 per annum,) and six negroes, ($ 385,) and about 20 barrels Roman cement, furnished for the repairs.

J. BROWN, Jr.
Second Auditor.

	$ 3,110 37
1827—Nov. 15, To balance per contra,	$ 1,306 64

AND DISBURSEMENTS,

March 1*st*, 1827, *to November* 15*th*, 1827: *Distinguishing from those that are Contingent.*

1827.			
May 15,	By this sum received of Jas. Ware, collector of tolls on the mountain section of the James River Canal, from March 1, 1827, to this date, on boats descending,	$439 17 7½	
	On boats ascending,	38 76 1½	
	On the towing-path,	7 77 7½	
	On the bridge,	15 31 2½	
	Balance due on return, March 1, 1827,	4 88 3	
			505 91 2
Aug. 15,	By this sum received of ditto, from May 15, 1827, to August 15, 1827, on boats descending,	633 73 9	
	On boats ascending,	87 31 5	
	On the towing-path,	16 62 2	
	On the bridge,	20 12 5	
			757 80 2
Nov. 15,	By this sum received of ditto, on boats descending, from August 15, to November 15, 1827,	357 43 1	
	On ascending boats,	135 46	
	On the towing-path,	21 12	
	On the bridge,	25 99 5	
			540 00 6
			$1,803 73 0
	By this sum against this improvement, from March 1, to Nov. 15, 1827,		1,306 64 0

B.

Estimate of tolls collected on Kanawha Turnpike Road, between the 15th day of November, 1826, and the 15th day of November, 1827, with an estimate of the cost of repairs for the same period of time, as fixed by the contracts of May, 1827.

To keeping in repair the road from its western termination to Lewisburg, under a contract with Francis Carrol, for three years, at $1000 per ann.	$1,000 00	
To keeping in repair the road from Lewisburg to Covington, under a contract with James Knox, for three years, at $313 17 per annum,	313 17	
		1,313 17
To balance in favor of the road for one year,		2,690 31½
		$4,003 48½

1827.				
Feb. 15,	Rec'd of James Kendall,	133 76		
	Deduct 9 per ct. com'n,	12 03		
			121 73	
	Rec'd of Joseph Airy,	141 95		
	Deduct 9 per ct. com'n,	12 77		
			129 18	
	Rec'd of H. M'Laughlin,	219 11¾		
	Deduct 7 per ct. com'n,	15 33¾		
			203 78	
	Rec'd of Wm. G. Bates,	101 50		
	Deduct 9 per ct. com'n,	9 13		
			92 37	
	Rec'd of P. Metzaker,	131 81¼		
	Deduct 9 per ct. com'n,	11 86		
			119 95¼	
	Rec'd of Miles Manser,	242 01		
	Deduct ⅓ for boat & hands,	80 67		
			161 34	
	Carried forward,			828 35¼

	Brought forward,			828 35½
1827.				
May 15,	Rec'd of Miles Manser,	126 48		
	Deduct ⅓ for boat & hands,	42 17		
			84 31	
	Rec'd of P. Metzaker,	90 40¾		
	Deduct 9 per ct. com'n,	8 13¾		
			82 27	
	Rec'd of Wm. G. Bates,	75 73½		
	Deduct 9 per cent.	6 81½		
			68 92	
	Rec'd of H. M'Laughlin,	194 02		
	Deduct 7 per cent.	13 58		
			180 44	
	Rec'd of Jos. Airy,	116 90		
	Deduct 9 per ct. com'n,	10 52		
			106 38	
	Rec'd of James Kendall,	85 47		
	Deduct 9 per ct. com'n,	7 69		
			77 78	
				600 10
Aug. 15,	Rec'd of P. Metzaker,	95 32		
	Add Blair & Shields' toll,	8 14		
		103 46		
	Deduct commission 9 per cent. 9 30			
	Blair & Shields' toll not to be paid, they being contractors, 8 14			
		17 44		
			86 02	
	Rec'd of Miles Manser,	167 42½		
	Off ⅓ for hands and boat,	55 80¾		
			111 61¾	
	Rec'd of Wm. G. Bates,	70 75		
	Off 9 per ct. commission,	6 36		
			64 39	
	Rec'd of H. M'Laughlin,	234 67		
	Off 7 per ct. commission,	16 42		
			218 25	
	Carried forward,		480 2	

	Brought forward,			480 27¾	1428 45¼
1827.					
Aug. 15,	Rec'd of Joseph Airy,		244 62		
	Off 9 per ct. commission,		22 02		
				222 60	
	Rec'd of John A. Reid,		139 42½		
	Off 9 per ct. commission,		12 54½		
				126 88	
					829 75¾
Nov. 15,	Rec'd of Miles Manser,		396 12		
	Off ⅓ for boat and hands,		132 04		
				264 08	
	Rec. of Overton Garland,		281 07		
	Off 9 per cent. commission,	23 31			
	Shields' & Blair's tolls,	2 93¾			
			26 24¾		
				254 82¼	
	Rec'd of Wm. G. Bates,		290 80½		
	Off 9 per ct. commission,		26 17½		
				264 63	
	Rec'd of H. M'Laughlin,		428 05		
	Off 9 per ct. commission,		38 52		
				389 53	
	Rec'd of Joseph Airy,		394 00		
	Off 9 per ct. commission,		35 46		
				358 54	
	Rec'd of John A. Reid,		234 81¼		
	Off 9 per ct. commission,		21 13¼		
				213 68	
					1,745 28¼
					$4,003 48½

C.

Be it enacted by the General Assembly, That the following tolls shall be demanded and collected at the bridges or ferries across Gauley or Greenbrier river, on the Kanawha turnpike road, in lieu of the tolls heretofore imposed by law, to wit:

	Cents.
For every person on foot, in a carriage, or on horse-back,	6¼
For every riding horse,	12½
For every four wheel riding carriage, drawn by four horses,	50
For every four wheel riding carriage, drawn by two horses,	37½
For every two wheel riding carriage, drawn by two horses,	37½
For every two wheel riding carriage, drawn by one horse,	25
For every carryall, on every animal drawing the same,	18¾
For every travelling stage, on every animal drawing the same,	12½
For every animal drawing in waggons, carts, &c.	18¾
For every horse, mare, mule or gelding, not rode,	6¼
For every score of cattle,	25
For every score of hogs or sheep,	6¼

And be it further enacted, That persons going to, and returning from mill, shall be exempt from the payment of tolls at the several toll-gates and bridges on the Kanawha turnpike road.

And be it further enacted, That the Commissioner on the Kanawha turnpike road shall be authorised to remove the gate or gates for the collection of tolls, from either of the bridges or ferries, to some suitable place not more than three miles distant from the bridge or ferry, and there demand and collect the same rate of tolls as was collected at the bridge or ferry: And, during such removal, the bridge or ferry shall be passed free of tolls.

And be it further enacted, That it shall be the duty of the Commissioner on the Kanawha road to establish one additional toll-gate at some convenient place between John M'Clung's and the Dog-wood gap, and there demand and collect the same rates of tolls as are collected at the other gates on the said road.

And be it further enacted, That any person who shall be convicted of advising, pointing out, or directing persons ways by which they may avoid the gates established for the collection of tolls on the said road, shall forfeit and pay dollars for every such offence, to be recovered before any justice of the peace having jurisdiction of the case, in the name of the President and Directors of the James River Company; one half to the benefit of the person who will prosecute for the same, and the other half to be paid to the Commissioner, and by him to be accounted for and paid over in the same way the tolls are paid.

D.

KANAWHA, 14th November, 1827.

SIR,

If the State of Virginia should not pass a law to extend the turnpike to the Ohio river, I am willing to take 15 miles, commencing at the present termination of the road, and extend on downwards; provided the State will permit me to erect a gate, and charge the same tolls which they charge for an equal distance: the tolls to commence when the road is completed and received by the Commissioner, equal to that portion belonging to the State, which will be in two years, or perhaps a less period. If the State should not extend the road, I have no hesitation in saying that the whole of the western end could be let out on similar contracts.

A. STOCKTON.

Col. D. S. Garland.

E.

To David S. Garland, Esq. Commissioner of the Kanawha Road and Navigation.

SIR,

The several contractors for the improvement of the navigation of Kanawha river, having reported to me that they had completed their several contracts, I sat out from the head of the said navigation, on the 9th of October, ult. and descending the river to its mouth, made a minute and careful examination of all the said improvements.

The river at that time, (according to the best information I could obtain,) was lower than it had been known for several previous years, and admitted by all, to be as low as it ever was known to be before. When the then state of the water was compared with the several bench marks referred to in the contracts, for the purpose of indicating that stage of low water which was to govern them, it was found to be eleven perpendicular inches below that at the head of Tyler's shoals, and fourteen below that at the mouth of the river: that at Elk shoal had been removed by the improvement made there, and that at the mouth of Coal river differing so very widely with Mr. H. P. Taylor's notes upon the subject, I concluded that either he or myself had made a mistake in taking the levels from it, or that the instrument with which they were taken, (being a very imperfect one,) could not be relied upon, and I have taken no notice of it. I noted the least depth of water in each of the several sluices, as I measured them, and found it to be as follows: Richard's island, two feet; Morris's shoals, two feet; Windsor's bar, eighteen inches; Point Creek shoal, under two feet; Island shoal, less than two feet; Cabin Creek shoal, twenty inches.

The foregoing sluices are all comprehended within David Smiley's contract, and are above the mouth of Slaughter's creek. Below the mouth of Slaughter's creek, Witcher's creek shoals, and Leonard Morris's shoal, occur. They have been improved by Messrs. Epley & Morrison, and maintained a depth of not less than two and a half feet. Here the Salt Works commence, and the river, in its natural state, presents no obstruction to its navigation, in a distance of ten miles, down to the mouth of Elk river. From the mouth of Elk, to the mouth of Coal river, the depth of the several sluices was tested by the passage of a flat-bottomed boat, 16 feet wide, drawing two feet of water. She touched in Elk shoal, passed Two Mile and Island shoals, without touching. At Tyler's shoals she rubbed considerably, and hung on some rocks immediately below the sluice. From thence to the mouth of Coal river, passing New Corner shoals and Peeled Maple bar, the water by measurement appeared to maintain a depth of two and a half feet. The boat, nevertheless, grounded: perhaps she had deviated from the channel; I had left her. At the mouth of Coal river, the boat was lightened to a draught of twenty-two inches: she rubbed considerably upon a bar immediately below the mouth of Coal. Johnson's shoals appeared to maintain a depth of two feet. The boat rubbed at Tacket's, and at Red House shoals, and at several other places, where no improvement had been made.

After passing Red House shoal in the boat, she stopped, and I proceeded on to the mouth of the river, in a canoe which I had brought with me for the purpose, measuring the depth of water in the shoals, with a staff, as I passed them, under the guidance of William Morrison, one of the contractors, and found it to vary from twenty-seven to thirty inches.

All the improvements, from the mouth of Elk river downwards, are comprehended within Morrison and Epley's contract, except Elk and Tyler's shoals, which were contracted for by Col. Philip R. Thompson. The work done by Messrs. Epley and Morrison, during the present year, comprises Island shoals and Two Mile shoal, in the 40th and 39th miles, and Leonard Morris's shoal, in the 27th mile, and Witcher's, in the 24th mile.

It will be perceived, by a retrospective view of the foregoing measurements, that the sluices in these shoals maintain a greater depth of water than those made by them in previous years; and that, if the proper allowance be made for the depression of the water below the bench marks, referred to in their contract, as the standard of low water, they are of the depth required by the contract.

The work done by David Smiley, during the present year, is comprised in the completion of Childers' shoals, in the 11th mile, and Morris's shoals, in the 10th and 9th miles.

The same may be said of these operations, as has been above stated in relation to those of Morrison and Epley, except, perhaps, that the last mentioned sluices might not come quite up to the required depth; but they are wide, and of a strong current; and, at the time they were measured, contained all the water of the river, except some leakage through the wing-dams, which was unavoidable.

Whether the shallower sluices, which had been previously made, have filled up, or whether they were originally made no deeper, I cannot undertake to determine; they had, however, all been received and paid for in previous years, as the work progressed, with the reservation of 15 per cent. upon the amount of each section.

In relation to Col. Thompson's contract for the improvement of Elk and Tyler's shoals, it appears by a receipt of Mr. H. P. Taylor, dated on the 15th day of November, 1823, that, at that time, it was considered he had completed his contract; he has, nevertheless, done considerable work at Tyler's shoal, during the past season, and it is not yet in conformity with his contract; not being of the required width near its lower end, and, also, shallower there than the contract requires. It is, however, a sluice of about three-fourths of a mile in length, cut through a dry bank of gravel and stone, and forming a canal distinct from the river. If it were widened at its lower end, the accelerated velocity of the water would diminish its depth there, and prove disadvantageous. Col. Thompson alleges, that he has expended upon these improvements a considerable sum of money over and above the amount which he has received for them, which I have not the least doubt of, as I consider his bargain to have been an exceedingly hard one.

After the experience of the past season, and my examination and observations upon the river at its lowest stage, considerable doubts have arisen in my mind as to the practicability of effecting a sluice navigation, to admit the passage of boats drawing three feet water, at all seasons of the year. At some of the shoals, where the velocity of the current is greatest, the whole water of the river, in very dry seasons, would not, in my opinion, fill a sluice of forty feet wide and three feet deep. It is, therefore, doubtful, whether any further operations in deepening the sluices, upon their present construction, would produce any considerable benefit. What has been done, has materially improved the navigation of the river in dry seasons, and at the lowest stages of the water; but some of the sluices have received an unfortunate direction, and are very crooked; and, at a medium state of the water, boats are drawn and grounded upon the embankments of gravel and stone, formed of the excavated materials of the sluices; and, under such circumstances, prove rather an obstruction to the navigation than otherwise. At high water, they are lost sight of entirely, and have no effect at all. I consider the plan adopted for the improvement of this river, a very unfortunate one, and that if locks and dams had been substituted for it, a perfect steam-boat navigation might have been obtained, at an expense, very little, if any thing exceeding fifty per cent. upon the amount which has been expended. And even now, if one or two dams were erected at the most precipitous falls, below the mouth of Elk river, the navigation would not only be greatly improved by them, but the collection of tolls would be facilitated, and the water power thus created, would produce, in rents, a sum equal to the interest upon their cost.

All of which is respectfully submitted, by

JOHN STAPLES, *Engineer,*
Kanawha Road and Navigation.

Kanawha County, 14*th Nov.* 1827.

F.

The James River Company,
To Epley & Morrison.

1827.		
Nov. 10,	To the improving of the Thirteen Mile shoal of Kanawha river, which is below the 79th mile on said river,	1,150 00
	To the improving of Pond Gut and Ten Mile shoal, which are also below the 79th mile, and not embraced in our contract, dated the 23d of October, 1823,	92 00
		$1,242 00

EPLEY & MORRISON.

G.

Be it enacted by the General Assembly, That all that part of the Kanawha river, with all its shores, bays and inlets, lying and being between the north side of Elk river, and the south side of Slaughter's creek, at their confluence with the Kanawha, and passing in a direct line across said river at the aforesaid points, shall form one collection district, to be called the district of Charleston; an office for which shall be kept at Charleston, in said district.

All boats and river crafts calculated or intended to be used in the trade of said river, shall be reported at the office of the receiver of tolls within the said district, and there marked, numbered and registered in a book to be kept for that purpose.

All boats and river crafts as aforesaid, failing to comply with this regulation for the space of twenty-four hours, shall be subject to be seized and sold by the receiver of tolls for ready money, for the benefit of the James River Company; said receiver retaining ten per cent. from the said sale for his expense and trouble.

All boats registered or unregistered, departing from the said district, without having first filed with the receiver of tolls a manifesto of her cargo, made out on oath, if required, and without having paid the tolls as required by law, and received a clearance, shall be subject to be seized with her cargo, and sold for the benefit of the James River Company, by the receiver of tolls, he retaining ten per cent. for making such seizure and sale.

And it is further enacted, That if the owner or skipper of any boat shall fraudulently obtain a clearance by a false manifesto or representation, all the goods and effects on board said boat, subject to duty, and not entered, shall be seized and sold by the receiver of tolls in manner aforesaid.

And be it further enacted, That the said receiver of tolls shall be, and he is hereby authorised to board and enter all boats in the said river, within the limits heretofore designated, as forming the district of Charleston, for the purpose of examining the cargo; and all and every person and persons on board the said boat, refusing or neglecting to come to, when so required by the receiver of tolls, shall forfeit and pay $20 each, to be recovered before any justice of the peace; and on failure to pay and satisfy the judgment when rendered, shall receive lashes on his or her bare back.

And be it further enacted, That any person or persons who shall ship off any article subject to the payment of tolls without having first entered and paid the tolls thereon, shall forfeit and pay three times the amount of tolls on the article so sent off, to be recovered before any justice of the peace in manner aforesaid.

And be it further enacted, That any person or persons resisting the officer in the exercise of any powers herein before given to him, shall be deemed guilty of a misdemeanor, and punished accordingly.

H.

Whereas, by a contract, dated the 8th day of September, 1823, filed in the Second Auditor's office of Virginia, between Philip R. Thompson and Hugh P. Taylor, said Thompson was to complete the improvement of the navigation of the Elk and Tyler shoals in Great Kanawha river, in the manner therein mentioned: And whereas, said Thompson hath completed all the said improvement at Tyler's shoals to my entire satisfaction, and as provided for by said contract:

Therefore, I, as the Engineer of the Kanawha Road and River, on behalf, and in the name of the Commissioner of the Kanawha Road and Navigation, for the James River Company, and as provided for by said contract, do hereby accept and receive the whole of Tyler's shoals as being completed: And I, as aforesaid, do further agree, that said Thompson hath made an embankment two hundred feet long at the bend of the canal at Tyler's shoals; also, one hundred feet length of a wing-dam at the head of said canal; for which he is entitled to be paid as extra work, at the final settlement, according to the terms of said contract: Said Thompson being hereby released in full of all further work or responsibility whatever at Tyler's shoals, by virtue of said contract. Given under my hand, this 15th day of November, 1823. This being subject to the approbation of the said Kanawha Commissioner.

H. P. TAYLOR,
As aforesaid.

Teste,
J. A. Lewis.

I.

A STATEMENT

Of Drafts drawn on the Second Auditor, and paid out of the loan of $40,000.

Date.	*In whose favour.*	*Object of Expenditure.*		*Amount.*
1827.				
Feb. 8,	Francis F. Purcell,	Balance due to him as Engineer,	286 63	
		Contingent charges,	28 42	
				315 05
10,	L. & S. Brown,	Damages awarded on canal,		100 00
23,	William Shields,	Balance for bridge at canal,		3,041 12
	William Paxton,	Balance due to him as Engineer,		147 94
21,	John O. Brian,	Making road at canal,		43 62
March 5,	Francis Carrol,	Repairs on the Kanawha road,		1,500 00
May	James C. Warren,	Balance due to him as Engineer,	666 67	
		Deduct money in his hands,	127 45	
				539 21
18,	Jordan & Irvine,	Balance due on the mountain section of canal,		5,000 00
19,	Shields & Blair,	In part for Gauley bridge,		1,500 00
April 24,	Eddithy Clay,	Damages awarded on canal,		30 00
June 27,	John Staples,	As Engineer, one quarter's salary,		200 00
7,	Waugh & Nevill,	Balance for house for gate-keeper,		190 00
Sept. 9,	Shields & Blair,	In part for Gauley bridge,		1,500 00
Oct. 30,	William Hannah,	Balance for toll-house,		905 26
Nov. 9,	Samuel Hannah,	For ring-bolts and buoys, Kanawha river,		162 00
May 17,	Charles Callahan,	Balance for putting roof on bridge,		62 50
Aug. 15,	Epley & Morrison,	Improvement on Tyler and Johnson's shoals,		2,380 00
Sept. 13,	John Staples,	One quarter's salary as Engineer,		200 00
Nov. 10,	Epley & Morrison,	Contract on Kanawha river,		5,548 20
12,	David Smiley,	Contract on Kanawha river,		979 58
	Jas. C. M'Farland,	Iron for Gauley bridge,		161 34
Dec. 13,	John Staples,	Balance quarter's salary as Engineer,		146 20
17,	Shields & Blair,	In part for Gauley bridge,		600 00
				$25,252 00

J.

A STATEMENT

Of money wanted to complete existing contracts, and to satisfy miscellaneous claims, if allowed.

Name of Claimant.	*Nature of Claim.*	*Amount.*
Shields & Blair,	Balance for Gauley bridge, when complete,	2,867 60
	To pay for 1090 bushels lime used on bridge at Gauley,	250 00
Epley & Morrison,	Retained 15 per cent. on their contract,	6,168 80
Epley & Morrison,	Claim for extra work below the 79th mile,	1,242 00
David Smiley,	Retained 15 per cent. on his contract,	902 57
Henry Sailey, Joseph Glasgow & George Kiger,	Damage for overflowing land,	700 00
	Wanting to build at the canal, a house for a lock-keeper,	300 00
	Wanting a toll-house near the White Sulphur Springs,	200 00
		$12,630 37

SECOND AUDITOR'S REPORT

TO THE

GENERAL ASSEMBLY.

Second Auditor's Office,
5th February, 1828.

Sir,

I have the honor to transmit, in the enclosed statements marked A, B, and C, the information called for by a resolution of the House of Delegates, of yesterday.

I have taken the liberty of adding statement D, as being connected with the others, and furnishing a summary view of the expenditures on the several great improvements undertaken by the State.

With great respect, Sir,
Your most obedient servant,
J. BROWN, Jr.
Second Auditor.

A.—Revenue of the Lower James River Canal,	In the year ending 31st Dec. 1827.
B.—Articles on which tolls were paid on the Lower James River Canal,	
C.—Receipts and disbursements of the James River Company,	

D.—Expenditures made out of loans, to 31st Dec. 1827.

To the honorable the Speaker of the House of Delegates.

LIST OF ARTICLES

Carried up James River from Richmond, and charged with toll on the Lower Canal, in the year ending 31st December, 1827.

48,644		cwt. unenumerated goods,	Producing in tolls, $6,320 38
22,064		sacks salt,	
299	1-8	hogsheads rum, wine, &c.	
1,328	3-4	hogsheads whiskey,	
153	6-10	tons bar iron,	
221		tons pig iron,	
1,247		tons plaster,	
21,188		bushels corn,	
381	1-2	barrels flour,	
35	1-10	M feet plank,	
30	3-4	tons hay,	
	6-10	M staves,	
102	9-10	M shingles,	
20		bushels wheat,	
8		bushels coal,	

Descending, &c.	$41,279 87
Ascending,	6,320 38
Passed through the basin locks,	90 95
	$47,691 20

E. E.

J. BROWN, JR.
Second Auditor.

1*st January*, 1828.

C.

GENERAL ACCOUNT

Of Receipts and Disbursements, on account of the James River Company, for the year ending 31*st Dec'r,* 1827.

RECEIPTS.

Balance in the Treasury, the 1st January, 1828,		$68,773 09
For tolls and rents on the Lower Canal,	51,456 20	
For tolls and rents on the Kanawha Road,	1,000 00	
From the sale of $40,300 certificates of James River Company loan, belonging to the Surplus Fund,	40,400 75	
From the Board of Public Works, to pay one year's interest to the 1st July last, on $1,230,000 certificates of James River Company loans,	70,370 34	
From Ph. R. Thompson, for balance unexpended in his hands, as late Treasurer on the Kanawha River, returned with interest,	474 80	
Total receipts,	———	163,702 09
		$232,475 18

DISBURSEMENTS.

For Improvements:		
On Lower James River Canal,	1,766 50	
On Blue Ridge Canal,	51,607 63	
On Kanawha Road, (Gauley Bridge,)	3,761 34	
On Kanawha River,	13,370 20	
Charges on the Kanawha Road and Navigation, (salary of Commissioner and his Engineer, &c.)	1,757 58	
Charges on new improvements, (salary of the Second Auditor and his clerk,)	733 33	
Amount paid out of loans,	———	72,996 58

Brought forward,		72,996 58
For Repairs and Expenses:		
On the Lower Canal,	8,060 97	
On the Blue Ridge Canal,	516 35	
On the Kanawha Road,	1,606 91	
		10,184 23
For dividends on 700 shares original stock,		16,596 00
For interest on James River Company certificates loan,		70,295 34
Credited to Surplus Fund for the 12 months ending 30th June, 1827, and paid over to Board of Public Works,		22,163 36
Total Disbursements,		192,235 51
Balance in the Treasury, 1st January, 1828,		40,239 67
		$232,475 18

The Items composing the balance in the Treasury, are:

Balance of Loan Fund unexpended, as per statement D,		$13,507 81
Balance of Tolls on Kanawha Road and River, after deducting Repairs and Expenses,		1,427 44
Dividends to July, 1827, inclusive, not drawn,	4,027 12	
Dividends to January, 1828,	8,400 00	
		12,427 12
Surplus Fund for January, 1828,		12,302 30
Rent of water on Lower Canal, for 1828,		500 00
Interest on Certificates Loan, due July, 1827, not drawn,		75 00
		$40,239 67

E. E.

J. BROWN, Jr.
Second Auditor.

1*st January*, 1828.

D.

SUMMARY STATEMENT

Of Expenditures made out of Loans obtained by the James River Company, to 31st December, 1827.

Lower section of the James River Canal,		$ 607,607 34
Mountain section of ditto,		365,013 32
Kanawha turnpike road,	165,064 57	
Re-building Gauley bridge, (in part,)	3,761 34	
		168,825 91
Kanawha river,		79,055 [illegible]
Salaries of the Commissioner of the Kanawha Road and Navigation, and his assistants,	5,532 96	
Salaries of the Second Auditor and his Clerk,	3,358 08	
		8,891 04
Total expenditure since February, 1820,		$ 1,259,392 94

NOTE.—Amount of loans obtained,	$ 1,230,000 00
Premiums on the $ 200,000 loans of 1825 and 1826,	2,500 00
Amount received from the sale of $ 40,300 of certificates of James River loans belonging to the Surplus Fund,	40,400 75
	1,272,900 75
Deduct expenditures as above stated,	1,259,392 94
Balance in the Treasury, as per statement C,	$ 13,507 81

E. E.

J. BROWN, Jr.
Second Auditor.

1st *January*, 1828.

EXTRACT

RELATING TO THE

INTERNAL IMPROVEMENT OF THE STATE,

From Governor Giles's Message to the General Assembly, 3d December, 1827.

After having attentively examined the reports upon the subject of internal improvements, I had several instructive conversations with Captain Crozet, our able, frank and indefatigable State Engineer, with a view of ascertaining the present condition and future prospects of the internal improvements within this State; and I take pleasure in informing the General Assembly, that I found both better than I had anticipated. Whilst very large sums have been expended, without advantages commensurate with the amount of the expenditures, yet more improvements had been actually made, than I expected, and the losses from individual subscribers have been much less. Some works are still progressing, and the third and last section of the Manchester and Petersburg turnpike road has been completed during the present season. Upon being informed of that fact, in the manner prescribed by law, on the 12th day of May last, I issued a proclamation, authorising the receipt of toll, from the date thereof, upon that section; so that toll is now received upon the whole road. There is reason to believe, that the Manchester and Petersburg turnpike will be a productive stock.

After bestowing much reflection upon the conversations respecting internal improvements, with Captain Crozet, I requested him to reduce the substance of them to writing, so as to exhibit a plain and compendious view of the present condition of the most urgent internal improvements required by the State; to suggest the points of improvement most wanted, and the difficulties which have heretofore prevented their completion. This service has been performed by Captain Crozet, in a very satisfactory manner, by a report marked L, which will accompany this communication. It will appear from this report, that vast and splendid schemes of internal improvements are within the contemplation of Captain Crozet, as well as some of a more limited character. Some of these last, loudly call for immediate execution. The first is a road from Covington to James river, at the Blue Ridge. The second from the termination of the present Kanawha turnpike, to the State line, separating it from Kentucky, by the mouth of the Guyandotte, to the mouth of Big Sandy. The third from Winchester, by Clarksburg, to be extended to Parkersburg. The three improvements might be carried on simultaneously; or the extension of the Kanawha turnpike to the westward might be postponed for the present. The completion of these three roads would not only contribute essentially to the wealth, convenience, and accommodation of the people of a great portion of the State, but would give an entire new and cheering aspect to the State itself, in its corporate character. There is no difficulty in assigning the true cause of the incompletion of these roads. It is the inability of the inhabitants of that section of country, through which they will pass, to furnish three-fifths of the fund required by law for that object, in the present depressed state of prices. This cause is likely to continue; so that there is no prospect of completing those great objects of internal improvement, under the present system, within any short time. So long as the present system shall continue in relation to these objects, so long they will remain incomplete. It is not intended, however, to impair the present system in relation to any other objects. These questions then present themselves: Shall these great objects of internal improvements be completed at all? If so, in what manner shall it be done? The only mode that occurs to me is, that it should be done by the State; and out of State funds. If these three roads were completed by the State, intersectional roads would then readily be made upon the present plan; requiring three-fifths of the funds to be subscribed by individuals. Until this be done by the State, languor, inactivity and delay, will continue to characterize the proceedings in relation to the contemplated improvements; whilst the delay itself, would deprive the improvements of a greater portion of their value. The present time is peculiarly favorable to internal improvements. The prices of land and labor are unusually depressed; and money can readily be obtained upon loan, at moderate rates of interest. It is, therefore, most respectfully submitted to the wisdom of the Legislature, to determine upon the propriety of making the three roads designated, out of State funds, relying upon the tolls for ultimate reimbursement: and if no other funds for this most desirable object should be at its disposal, of authorising loans for the purpose. The first road would require $ 31,000; the second $; the third $ 66,000. The whole of these sums seem to me unimportant, compared with the facility of obtaining them, and the great importance of the objects to be effected by them. I hope to be indulged for remarking, as further inducements to the adoption of this recommendation, that the greater part of these contemplated improvements might be completed in one season, and the whole in two, by a due application of abundant funds; and that where an enterprize is on foot, attended with an assurance of a speedy accomplishment, and abundant funds are applied to it, the works proceed with spirit, activity and alacrity, and good effect: whereas, when funds are scantily or inadequately supplied, the work is attended with languor, distrust, expensiveness and delay. The great point to be ascertained to justify any project for internal improvement, is, that the utility of the project when completed, shall more than compensate the inconvenience occasioned by the expenditure in its completion. When this point is ascertained with sufficient certainty, then true policy and true economy would require that competent funds be at once applied; and the improvement be at once accomplished. Under the present recommendation, there cannot exist a doubt, but that the improvements, when completed, will greatly more than compensate in value, the expenditure for their completion.

A grand and splendid project of improvement mentioned in Captain Crozet's report, consists of connecting the New river with the Roanoke, and the Roanoke with James river. This project is reported by Captain Crozet to be not only practicable, but easy of execution; and it is understood, that its cost will be comparatively small, with any other extensive internal improvement yet completed, or contemplated, within the United States. In case this improvement should be completed, it would open a vast field for speculation, as to the extent of its utility, with some of the western and southern States, as well as Virginia; and it would present at least one great advantage over the justly celebrated canal of New-York. It is in a latitude which would seldom subject the navigation of a canal to the obstructions by ice; whereas, the New-York canal is completely obstructed, probably five months in the year. It is submitted to the wisdom of the General Assembly to determine, whether true policy would not require provision to be made at present for the most strict and accurate reconnoissances to be made of the most eligible routes, for this projected improvement. with a view to the future proceedings of the Legislature in that respect. Captain Crozet's report will present a clear and full view of these several projects for internal improvements; and it has been called for and communicated to the General Assembly, at this time, to afford it a better oppertunity of considering its important contents, than could have been had, if it had been delayed until after his general annual report to the Board of Public Works. I earnestly recommend this report to the first attention of the General Assembly.

L.

REMARKS OF THE PRINCIPAL ENGINEER,

On the most urgent Improvements in the State of Virginia; (referred to in the foregoing extract from the Governor's message.)

The basin of James river is generally considered as the main commercial artery of the State: its connexion with the Kanawha has, on this account, been one of the earliest objects of public attention and patronage; and any improvement related to it, cannot fail to enlist much public interest.

The plan recommended by Thos. Moore, to unite the western and eastern trades, was begun with a spirit, which received a check when it was discovered by actual experience, that the expense attending it would greatly exceed the estimate. A pause ensued, and new investigations were commenced.

Of this great scheme, the following parts have been executed, viz:

1st. 30 miles of canal, from Maiden's Adventure to Richmond.

2d. 7 miles in the Gap through the Blue Ridge.

Both of which will remain an unproductive expenditure, until these two links shall have been connected by a continuous improvement: the Fund for Internal Improvement having, in the mean time, to bear a clear yearly charge of about 50,000 dollars.

3d. 100 miles of turnpike, from Covington to 6 miles below the Great Falls of Kanawha, intended originally as a line of portage, but which cannot be used advantageously as such, so long as the navigation of James river remains unconnected with Covington.

4th. The improvement by sluices of the Great Kanawha.

To render this long line of communication productive, the improvement of James river is indispensable: but it must necessarily take much time before it can be completed; and in the mean time, the advantages afforded by the Kanawha turnpike, are limited, owing to the want of a proper communication from Covington eastward.

Imperfect as it is, the navigation of James river affords great facilities up to the Blue Ridge canal, and even to Pattonsburg; but from this point to Covington, it is seldom practicable. It appears, therefore, that a road from Covington to the Blue Ridge, which would require but one season for its execution, would, by uniting the navigable part of James river to the turnpike, increase the usefulness and productiveness of the latter, and also add to the revenue of the James river itself; besides its other advantages, among which must be numbered its leading towards Lynchburg; a road from this place towards the Springs and the west being much wanted. Applications for such a road have been presented to the Legislature within the two past years.

The distance from Covington to the Blue Ridge canal, is 80 miles by water. It would be about 45 miles by land, and the road could be made for $ 31,000. Such a road would be wanted even if the navigation was already improved, considering that it would connect the navigation of James river to the State turnpike, and give activity to the trade for which the improvement was intended. This road may with propriety be considered as part of the improvement which has become the property of the State: its cost would undoubtedly be soon more than reimbursed by the tolls received on it, and by the increase of revenue it would produce on the sections of the general line of improvement already completed.

There is also a law directing a survey to be made for a road to connect Covington, in a direct line, to Richmond. This new road is also desirable: it would pass by Lexington, and save probably 30 miles in the distance: it has, however, no great commercial object, and would chiefly be used for travelling.

At the other extremity of the Kanawha turnpike, its extension to the Kentucky line, at the mouth of the Big Sandy, is very desirable, and is attended with the wishes of the people of Kentucky, as the most direct road from their State, towards either Washington or Richmond. This road, itself productive, would add much to the revenue of the Kanawha turnpike. It is evident, that in general, short roads are not by far so advantageous as long and well improved lines of communication.

The most central road through the State, leads by Charlottesville to Staunton: its continuation to Parkersburg, at the mouth of the Little Kanawha, exactly in a line with Columbus, in the State of Ohio, has been for several years past in contemplation. Surveys and locations have been made, and the road in part executed, but on a small scale; the assistance granted by the Legislature having been limited. This road need not at first be made on a large scale, excepting one section of five miles, near Cheat river, which should at once be turnpiked. I reported on this road last year, (see 11th Report, page 80.) It might be made on the scale recommended, for $ 52,000, and enlarged afterwards, without adding to what its cost would be, if made at once of the increased dimensions. The same road, made immediately upon the plan of the Kanawha turnpike, might cost $ 110,000.

This road, by opening a direct communication with the centre of the State of Ohio, and the western counties of Virginia, would greatly benefit a large section of the State. It would, besides, add so much to the prosperity of Staunton, as to have a material influence on the revenue of the Staunton and James River turnpike, opened last year, and in which the State is interested. This turnpike being intended to meet the navigation of James river, at Scottsville, will likewise produce an increase of tolls on the river; and, consequently, any improvement calculated to benefit the trade of Staunton with the west, will also benefit the James river trade, and deserves the attention and patronage of the Legislature.

As to the connexion of James river and the Kanawha, by a canal, it is practicable, but would be very expensive.

These are the principal improvements which converge towards James river.

South of this stream, a considerable section of the State is interested in the navigation of the Roanoke. This depends greatly on the Dismal Swamp Canal, which is advancing towards a great degree of perfection. No road appears urgently wanted in that quarter.

The connexion of the Roanoke and New river, either by a canal or rail-way, is demonstrated to be quite easy; the canal requiring no tunnel, and an abundant supply of water being with great facility obtained.

It appears also feasible to unite the Roanoke and James river, near the point where the former and New river can be connected. The advantages of uniting New river with the Roanoke, and the latter with James river, are obvious; and there is no reason why these improvements should not place Virginia in as flourishing a condition as the New-York canal has done that State. Such a channel of commercial intercourse would place Virginia, in regard to the Middle States, in about the same relation that New-York is to the northern section of the Union, and Canada. The States of Ohio, Kentucky, Tennessee, and North Carolina, would unite to contribute to her prosperity.

North of James river, the valley of the Potomac has the interest of a considerable section of the State. The improvement of this valley has occupied so much of the public attention, that it is needless to add any thing on the subject.

In connection with the schemes contemplated in this quarter, as well as to benefit the north-western section of the State, a road in continuation of the Little River turnpike, is very desirable. From Winchester it should take its direction towards Clarksburg, and thence to the Metropolis of Ohio. This road, leading from the centre of the State of Ohio, to Washington, in the most direct line, would be preferred to all the others, which are more circuitous. A report on this subject will be found in the 10th Annual Report of the Board of Public Works, page 293. Upon the plan recommended, the probable cost of the road was estimated therein at $ 66,000: If made upon the plan of the Kanawha turnpike, it might cost $ 125,000.

Besides the benefits that would be conferred on an extensive and fertile section of the State, by this road, it would increase considerably the revenue of the Little River turnpike, on which 5 per cent. are already divided every year. (See 11th Annual Report, page 95.)

Another turnpike, branching off from the Little River turnpike, 15 miles from Alexandria, has been constructed as far as Warrenton, Fauquier county: It will not be very productive, until it has been extended as far as the valley of the Shenandoah. Its advantages, however, are much more local than any of the improvements above enumerated.

Respectfully submitted.

C. CROZET.

REPORT

OF THE

BOARD OF PUBLIC WORKS,

TO THE

GENERAL ASSEMBLY,

IN RELATION TO

THE CONSTRUCTION OF CERTAIN ROADS.

At a meeting of the President and Directors of the Board of Public Works, on Monday, the 28th day of January, 1828, the following report and resolutions were adopted:

The committee to whom was referred the resolution from the House of Delegates, of 22d instant, respecting so much of the Governor's message, as advises the construction of roads from Covington to the Blue Ridge; from the Kanawha turnpike road to the Kentucky line; and from Winchester to Parkersburg: as also, so much of the Commissioner's report, as relates to the construction of a road from Covington to Richmond, have had the same under consideration, and beg leave to report as follows:

The resolution directs, that this Board shall report its opinion "upon the public utility of the establishment of said roads." It presents for our consideration, four distinct subjects: 1st, the road "from Covington to James river, at the Blue Ridge:" 2dly, the road "from the termination of the present Kanawha turnpike, to the State line separating it from Kentucky, by the mouth of Guyandotte, to the mouth of Big Sandy:" 3dly, the road "from Winchester by Clarksburg, to be extended to Parkersburg:" and 4thly, "the construction of a turnpike road from Covington to the City of Richmond." Of the first, it is apprehended, that the information already collected, and in the possession of this office, does not justify our recommendation of it to the immediate patronage of the Legislature. Yet it is thought, that if the improvement of the river to the upper point should be abandoned, (which we deprecate,) it will be an undertaking of too much importance to be forgotten or neglected. Of the second, it is confidently thought, that it is essentially necessary to consummate the usefulness of the present Kanawha road; to unite, by indissoluble bonds, the social and commercial relations of the east and the west; and to impart harmonious consistency to the improvements which are made or contemplated, on the eastern extremity of this long line. On this subject, we entirely concur with both the present and late Chief Magistrates, in their communications to the General Assembly, upon the interesting relations to which we have alluded; and to their messages, respectively, we beg leave to refer for more ample illustrations. The third subject presents to our view relations precisely similar to those which have been just urged in respect to the second. The only difficulty is in deciding between the pretensions of the route from Clarksburg to Sistersville, and that from Clarksburg to Parkersburg or Marietta; this road terminating indifferently at either of these places. That to Sistersville has been surveyed and reported upon by the Principal Engineer, whose report accompanies the 10th Annual Report of this Board, vol. 4th, page 292; to which, and the report of this Board to the Speaker of the Senate, on the 18th January, 1827, we beg leave to refer. The distance is from 50 to 54 miles. This road, passing by the court-house of Tyler, would lead into direct communication (as we are informed by a member of the committee,) with two improvements now in progress in the State of Ohio, intersecting the national road through that State: one, by way of Woodfield, at a distance of about 34 miles; the other at Zanesville. The distance from Clarksburg to Parkersburg, is about 80 miles; and to Marietta, about 74 or 75. The relative merits of these routes, in reference to the State of Ohio, stand very nearly on an equality, so far as your committee is informed. The shorter distance to Sistersville, and the accommodation, pressed upon the attention of the committee, which this road would afford to travellers to Richmond, from the counties of Brooke and Ohio, by the way of Beverley, are circumstances well worthy of consideration, in determining a choice between the conflicting interests upon this line of improvement. Your committee are therefore of opinion, that the relative importance of these routes ought to be well ascertained, before a choice should be made. There is no natural impediment to the execution of either.

Of the fourth subject referred to us, your committee beg leave to say, that there is no evidence, by survey or examination, reported to this office, enabling them to estimate the practicability or utility of the proposed improvement. But granting its practicability, and all that can be said of its utility, let it be noticed, that the Commissioner has drawn into comparison the relative importance of this unmade road, and the one past Staunton, made, and almost immemorially in use.

By pursuing and examining this comparison, we shall be enabled to form some conclusions as to the expediency, at least, of the State's adventuring upon the improvement recommended by the Commissioner, from Covington to Richmond. Preliminary to our examination, let it be remarked, that the road which is now used, from Richmond to the intended point upon the Ohio, passes through Staunton; that it intersects the Kanawha turnpike road, at or near Covington; and that it is thence, westwardly, common with the one proposed by the Commissioner. Whatever distance, therefore, may be saved by this new road, will occur between Richmond and the point of intersection just indicated. Let this be Covington. From this to Richmond, the Commissioner estimates the distance at 135 or 140 miles. "This road," he says, "if made in a direct line will shorten the distance between the city of Richmond and the Ohio about one hundred miles." Now, the distance from this city, along all the sinuosities of the road, past Staunton, to Covington, is 192 miles. If from this be subtracted 100, there will remain but 92 miles between Richmond and Covington, bringing Covington eight miles in advance of Lexington, which is 100 miles off. But, the Commissioner himself estimates the distance to Covington, at 135 or 140 miles, in a direct line. Again, if to 140 be added the surplus 100, said to be saved, the sum will be 240 miles, by the present road to Covington; but the actual known distance is, as above stated, 192 miles, which subtracted from 240, leaves a balance of 48 miles, a distance terminating 18 miles beyond Lewisburg. The Commissioner is certainly mistaken in his premises, and of course in the results. This will appear, while we farther pursue his comparison. He says, "as to Staunton, that route will increase the distance at least 50 miles." Thus, then, there would be saved but 50 miles, instead of the "one hundred" before assumed. But even this saving, it is believed, is far overrated: For, if an arc be described, whose radius is thirty-six miles, and resting on Lexington, it will include all the road from near Covington to Staunton. Staunton being then supposed to be as near (and it certainly is) to Richmond, as Lexington is, the utmost increase of distance by the former cannot exceed 36 miles. Again, suppose it to be 40 miles by the straight line from Covington to Lexington, thence by the present devious road, to Staunton, is 36 miles: and from both the latter to Richmond, one hundred, (supposed) making the direct route, past Lexington 140, and the devious one by Staunton 176, and the same result occurs of 36 miles of difference. If from this difference be subtracted the increased distance between Covington and Lexington, by the unavoidable deviations from the straight line, and the difference between coming round, by the latter town, and coming directly to Staunton, the remainder will not probably exceed twenty or twenty-five miles. As nothing is certainly known of the practicable route, and its deviations from the straight line, between Lexington and Richmond, we do not take it into the above view. If, to the above remarks, it be added that by passing Staunton, the crossing of the North mountain, or any other, between that place, and Covington, is avoided; that an almost level road, throughout, is attainable, as reported by the Engineer (vol. 4, page 257,) and expected to be shortly made; that at least twenty miles of the road, across the Blue Ridge, directly towards Richmond, are already constructed by the Staunton and James River Turnpike Company—the expediency of the State's commencing and making a new road from Covington direct to Richmond, for the sake of saving some twenty miles, may be well questioned. But, waiving the expediency of this undertaking, your committee are persuaded that "the public utility" pleads with invincible force, in favor of that route which, leading past the University, the Warm and the Hot Springs, would at the same time afford accommodation to an incomparably greater number of travellers to and from the east and west. Those coming to, or going from Richmond, would be accommodated at a small expense of distance; while those coming to, or going from the cities to the north-east of it, would be accommodated from below the little mountains east of Charlottesville, throughout the mountainous region. These things are so obvious, and so universally known, that they can hardly require any farther urgency; and, it is presumed, need only to be presented to the recollection of all, to carry unquestionable conviction. Nor would we weaken that conviction by pressing any subordinate considerations.

With these reflections, your committee submit the following resolutions:

Resolved, That our present information does not justify our recommendation of the proposed road from Covington to James river, at the Blue Ridge, to the patronage of the General Assembly.

Resolved, That the extension of the Kanawha turnpike road, by the mouth of Guyandotte, to Big Sandy, is a work of great "public utility," and eminently deserving of efficient legislative patronage.

Resolved, That the road from Winchester to Clarksburg, and thence either to Sistersville, or to Parkersburg, or Marietta, is one of "public utility," and ought to be recommended to the General Assembly for its aid.

Resolved, That the road proposed from Covington, by Lexington, to Richmond, is not of such "public utility," as that this Board can recommend it to legislative patronage.

A true copy from the minutes.

J. BROWN, Jr.
Second Auditor.

AMOUNT PAYABLE

OUT OF THE

FUND FOR INTERNAL IMPROVEMENT,

IN 1828, AND SUBSEQUENT YEARS,

On account of STOCKS and LOANS authorised by law, and subscribed by the Board of Public Works.

	1828.	1829.	1830.	1831.	TOTAL.
Roanoke Navigation Company, - - - - -	3,200 00	-	-	-	3,200 00
Slate River Company, - - - - -	1,725 00	1,725 00	1,242 00	-	4,692 00
Ashby's Gap Turnpike Company, - - -	7,000 00	-	-	-	7,000 00
Staunton and James River Turnpike Company, - -	10,000 00	5,000 00	-	-	15,000 00
Fallsbridge Turnpike Company, second subscription, -	4,000 00	2,000 00	-	-	6,000 00
Shepherdstown and Smithfield Turnpike Company, - -	9,287 50	9,287 50	-	-	18,575 00
Dismal Swamp Canal Company, (Loan to,) - -	7,500 00	-	-	-	7,500 00
Lower Appomattox Company, - - - -	-	4,000 00	8,000 00	4,000 00	16,000 00
Tye River and Blue Ridge Turnpike Company, payable as soon as the funds of the Board will permit, - - -	-	-	-	-	2,500 00
Rappahannock Company, payable as soon as the funds of the Board will permit, - - - - - -	-	-	-	-	20,000 00
	$42,712 50	$ 22,012 50	$ 9,242 00	$ 4,000 00	$ 100,467 00

E. E.

J. BROWN, Jr. 2d Auditor.

DUTIES

OF THE

PRINCIPAL ENGINEER,

FOR THE YEAR 1828.

(*Adopted by the Board of Public Works, 28th Jan'y, 1828.*)

The committee appointed to prescribe the duties of the Principal Engineer, for the present year, having performed that duty, beg leave to report:

That the urgency of the service required of him on the James and Jackson's rivers, during the last season, having caused the pretermission of most of the duties prescribed to him, at the last session of this Board, it will be proper that the instructions of the 24th January, 1827, should be renewed; and that he be further instructed to

SURVEY THE MOST ELIGIBLE ROUTES FOR ROADS,

From Warrenton, in the county of Fauquier, to Staunton.

From Strasburg, in Shenandoah county, to Berry's ferry, in Frederick.

From the town of Harrisonburg, in Rockingham county, to Franklin, in the county of Pendleton, and thence to Beverley, in the county of Randolph.

That he survey the Roanoke river, from Pannill's ferry, to the highest practicable point to which navigation can be carried on said river.

That he also survey and examine the country between that point and New river, with a view to connecting those rivers, by a canal or rail-roads between them; as also the nearest and best point of connexion with the navigable waters of James river.

The following resolutions are therefore submitted:

Resolved, That the Principal Engineer attend during the present year to the unexecuted orders of the last session of this Board, as also to the survey of routes for the following roads respectively, viz:

From Warrenton to Staunton.

From Strasburg to Berry's ferry.

From Harrisonburg to Franklin and Beverley.

From Harrisonburg, through Brock's Gap, to the South Fork of the South Branch of the Potowmac.

That he survey and examine the Roanoke river, from Pannill's ferry to the highest practicable point of navigation: and that he survey and examine the country between that point and New river, and between Roanoke and James river, and report to this Board the probable cost of connecting the said rivers, by canals or rail roads, as ordered by a resolution of the General Assembly, passed on the 26th January, instant.

◆

By a resolution of the Board of Public Works, passed the 26th January, the Principal Engineer is directed, on application from the Middle turnpike company, his other duties admitting of it, to survey the best route for the said road.

◆

By an act of the General Assembly, passed the 28th February, 1828, it is made the duty of the Principal Engineer, so soon as his previous engagements will permit:

"To inspect and examine the location of that part of the road from the town of Staunton to the mouth of the Little Kanawha, between Weston, in the county of Lewis, and Parkersburg, in the county of Wood, with full power and authority to designate and prescribe such change and alteration in the route or location of the said road, within the distance aforesaid, as to him may seem proper."

E. E.

J. BROWN, Jr.
Second Auditor.

THIRTEENTH

Annual Report

OF THE

PRESIDENT AND DIRECTORS

OF THE

BOARD OF PUBLIC WORKS,

TO THE

GENERAL ASSEMBLY OF VIRGINIA,

JANUARY 23, 1829.

RICHMOND:
Printed by Samuel Shepherd & Co.
1829.

RICHMOND, 24th January, 1829.

SIR,

I have the honor to lay before the General Assembly, the Annual Report of the President and Directors of the Board of Public Works, prepared in conformity to the Act, entitled, "An Act creating a Fund for Internal Improvement."

With great respect, Sir,

Your most obedient servant,

WM. B. GILES,
Pres't of the Board P. Works.

The Honorable the Speaker of the House of Delegates.

REPORT.

The President and Directors of the Board of Public Works, in obedience to the Act, entitled, "An Act to create a Fund for Internal Improvement," beg leave to submit the following Report to the General Assembly:

The Fund consists of the undermentioned permanent and disposable stocks, viz:

PERMANENT FUND.

125½	shares of stock in the Little River Turnpike Company,		12,550 00
250	shares of stock in the James River Company,		50,000 00
7947	shares of stock in the Bank of Virginia,		794,700 00
3334	shares of stock in the Farmers' Bank of Virginia,		333,400 00
900	shares of stock in the Bank of the Valley,		90,000 00
231	shares of stock in the North Western Bank of Virginia,		23,100 00
70	shares of stock in the Dismal Swamp Canal Company,		17,500 00
82	shares of stock in the Swift Run Gap Turnpike Company,		4,100 00
125	shares of stock in the Appomattox Company,		12,500 00
70	shares of stock in the Potowmac Company, or its equivalent in the capital stock of the Chesapeake and Ohio Canal Company,		31,111 11
	Certificates of James River Company,		50,000 00
	Making an aggregate of		$1,418,961 11
	Of which, the amount yielding revenue is,	1,357,850 00	
	And the amount unproductive is,	61,111 11	
			$1,418,961 11

DISPOSABLE FUND.

This Fund consists of stocks acquired by the income of the Fund for Internal Improvement, and is disposable agreeably to the 13th section of the Act creating that Fund. They are as follows:

35	shares in the Farmers' Bank of Virginia,	3,500 00
50	shares in the Bank of the Valley,	5,000 00
34	shares in the James River Company,	6,800 00
375	shares in the Bank of Virginia, (lent to the Richmond Dock Company,)	37,500 00
500	shares in the Bank U. States, (lent to the Dismal Swamp Canal Company,)	50,000 00
	Loan to the Richmond Dock Company,	12,500 00
	Loan to the Dismal Swamp Canal Company,	50,000 00
	Loan to the same Company,	37,500 00
1000	shares in the Richmond Dock Company,	62,500 00
186	shares in the Dismal Swamp Canal Company,	46,500 00
672	shares in the Leesburg Turnpike Company,	33,600 00
920	shares in the Swift Run Gap Turnpike Company,	46,000 00
50	shares in the Cartersville Bridge Company,	5,000 00
480	shares in the Fallsbridge Turnpike Company, (first subscription,)	24,000 00
160	shares in the same Company, (second subscription of $8,000,) amount paid,	5,500 00
200	shares in the Wellsburg and Washington Turnpike Company,	5,000 00
400	shares in the Snicker's Gap Turnpike Company,	20,000 00
140	shares in the Monongalia Navigation Company,	8,180 00
300	shares in the Fauquier and Alexandria Turnpike Company,	30,000 00
80	shares in the Manchester and Petersburg Turnpike Company,	8,000 00
800	shares in the Roanoke Navigation Company,	80,000 00
160	shares in the Fairfax Turnpike Company,	5,400 00
69	shares in the Slate River Company, (subscription $ 6,900,) paid	2,208 00
	Amount carried forward,	$ 584,688 00

Amount brought forward,		$584,688 00
140 shares in the Ashby's Gap Turnpike Company,		14,000 00
200 shares in the Staunton and James River Turnpike Company,		13,750 00
300 shares in the Lynchburg and Salem Turnpike Company,		30,000 00
Subscription of $18,575 to the Shepherdstown and Smithfield Turnpike Company, of which has been paid		8,127 50
Total amount of disposable stocks,		$650,565 50
The amount of this Fund yielding income is,	246,550 00	
The amount unproductive of revenue is,	404,015 50	
		$650,565 50
Permanent funds, in stocks,	1,418,961 11	
Disposable do	650,565 50	
	$2,069,526 61	
To which add the balance that should have been in the Treasury, to the credit of the Fund, on the 30th November, 1828,	1,971 61	
The aggregate amount of the Fund for Internal Improvement, should be,	$2,071,498 22	

From the productive portions of these funds, permanent and disposable, the following sums have been received, for dividends and interest, since the 1st day of December, 1827, viz:

From the Bank of Virginia, on 7,947 shares,	39,735 00
Ditto, on 375 shares,	1,875 00
Farmers' Bank of Virginia, on 3,369 shares,	16,845 00
Bank of the Valley, on 950 shares.	5,650 00
Amount carried forward.	$64,105 00

Amount brought forward,		$64,105	00
From the North Western Bank of Virginia, on 231 shares,		1,860	25
James River Company, on 284 shares,		6,816	00
Little River Turnpike Company, on 125½ shares,		251	00
United States' Bank, on 500 shares,		3,250	00
Lynchburg & Salem Turnpike Company, on 300 shares,		1,800	00
Swift Run Gap Turnpike Company, on 82 shares,		143	50
Staunton and James River Turnpike Company, on 200 shares,		200	00
Certificates of James River Company loans,	$50,000	3,000	00
Loan to the Richmond Dock Company,	12,500	750	00
Loan to the Dismal Swamp Canal Company,	50,000	3,000	00
Loan to the same Company,	37,500	1,917	00
James River Company, for surplus of tolls and rents on the lower canal, to the 31st December, 1827,		12,302	30
Ditto, do. to the 30th June, 1827,		12,303	28
Ditto, for surplus of tolls on the Blue Ridge Canal, and Kanawha Road, to the 15th November, 1827,		3,098	69
Ditto, for surplus of tolls on the Blue Ridge Canal, Kanawha Road and River, to August, 1828,		2,029	79
C. Crozet, Principal Engineer, paid into the Treasury, out of the advance made to defray the expense of surveys,		400	00
		$117,226	81

The disbursements made from the income received between the 30th November, 1827, and 1st December, 1828, have been on the following accounts:

Last instalment to the Roanoke Navigation Company,	3,200	00
Amount carried forward,	$3,200	00

Amount brought forward,	3,200	00
First and part of the second instalment to Shepherdstown and Smithfield Turnpike Company,	8,127	50
Second and part of the third instalment to Staunton and James River Turnpike Company,	8,750	00
Last instalment to Ashby's Gap Turnpike Company,	7,000	00
Second and part of third instalment to Falls Bridge Turnpike Company,	3,500	00
Last instalment of loan to Dismal Swamp Canal Company,	7,500	00
Advance to the Principal Engineer, for expenses of surveys,	2,950	68
One year's salary to the Collector of the Board,	300	00
Ditto to the Principal Engineer,	3,500	00
Ditto to the Second Auditor,	500	00
Ditto to the Second Auditor's Clerk,	219	08
Printing 12th Annual Report of the Board, &c.	311	62
Compensation and mileage of the Directors of the Board, at the 12th annual meeting,	1,291	90
Door-keeper, $ 48; postages, $ 17 53,	65	53
Interest on Certificates of James River Loans,	71,673	50
	$ 118,889	81

The certain and probable charges upon the income of the Fund for the current year, will be:

Part of second instalment to Shepherdstown and Smithfield Turnpike Company,	1,160	00
Third and fourth instalments to the same Company,	9,287	50
Part of third instalment to Staunton and James River Turnpike Company,	1,250	00
Fourth instalment to same Company,	5,000	00
Part of third instalment to Falls Bridge Turnpike Company,	500	00
Fourth instalment to same Company,	2,000	00
First instalment to Lower Appomattox Company,	4,000	00
Interest on Certificates of James River Company Loans, of $ 1,230,000,	71,673	50
Expenses of surveys and examinations,	2,500	00
Amount carried forward,	$ 97,371	00

Amount brought forward,	97,371	00
Salary of Principal Engineer,	3,500	00
Salaries of Collector, $ 300; Second Auditor, $ 500: Second Auditor's Clerk, $ 233 33,	1,033	33
Mileage and compensation of Directors, at the 13th annual meeting,	1,200	00
Printing 13th annual report, door-keeper, postages, &c.	266	67
	$ 103,371	00

To meet the foregoing charges, the probable receipts from the productive stocks of the Fund, will be:

For dividends on stocks of the Bank of Virginia, on 7,947 shares,	39,735	00
For dividends on stocks of the Farmers' Bank of Virginia, on 3,369 shares,	16,845	00
For dividends on stocks of the Bank of the Valley, on 950 shares,	5,700	00
For dividends on stocks of the North Western Bank of Virginia, on 231 shares,	1,617	00
For dividends on stocks of the James River Company, on 284 shares,	6,816	00
For dividends on stocks of the Little River Turnpike Company, on 125½ shares,	502	00
For dividends on stocks of the Swift Run Gap Turnpike Company, on 82 shares,	143	50
For dividends on stocks of the Lynchburg and Salem Turnpike Company, on 300 shares,	900	00
For dividends on stocks of the Staunton and James River Turnpike Company, on 200 shares,	500	00
For dividends on stocks of the United States' Bank, (lent Dismal Swamp Canal Company,) on 500 shares,	3,000	00
For dividends on stocks of the Bank of Virginia, (lent Richmond Dock Company,) on 375 shares,	1,875	00
For interest on loans to the Richmond Dock Company, of $ 12.500,	750	00
For interest on loans to the Dismal Swamp Canal Company, of $ 50,000,	3,000	00
Amount carried forward,	$ 81,383	50

Amount brought forward,	81,383 50
For interest on loans to the Dismal Swamp Canal Company, of $37,500,	2,250 00
For interest on Certificates of James River Company loans of $50,000,	3,000 00
	86,633 50
To which may be added:	
Surplus tolls and rents from Lower James River Canal, estimated at	24,600 00
Surplus tolls and rents from Blue Ridge Canal and Kanawha Road,	3,000 00
Surplus tolls and rents from Kanawha River,	2,500 00
Balance in the Treasury, on the 30th Nov. 1828,	1,971 61
Total probable receipts within the year;	118,705 11
Total certain and probable disbursements in the same period,	103,371 00
	$ 15,334 11

The excess of receipts over the charges enumerated, as here represented, is $15,334 11; but, as the receipts are dependent on stocks of different kinds, whose dividends vary, and as the charges may and will be increased by subscriptions to companies that have not heretofore participated in the Fund, the relation in which they are exhibited will be changed. There may be an excess after the engagements of the year shall have been complied with; but, it is more probable, that there will be a deficit. In the first place, the balance represented to be at the credit of the Fund in the Treasury, will be diminished by the sum of $1,088 92, the deficiency ascertained to exist in the accounts of the late Treasurer. It is, moreover, probable, that disappointment will be experienced in the receipt of interest accruing within the year, on loans made to the Dismal Swamp Canal, as a communication from that company, recently received, represents their funds to be entirely exhausted in the prosecution of their work, and asks for a suspension of the payment of interest until the receipt of tolls, the only resource of the company, shall give the means of paying.

The estimate of receipts from other sources, however, is formed upon a low scale; so much so, that it may be confidently expected, that the income of the year calculated upon from dividends of the banks and surplus tolls of the James

River Company, will be equal in amount, over and above the estimate, to the sum subtracted by the above causes.

In the estimate of receipts, is included the surplus of the tolls of the James River Company. It has been ascertained, however, since a derangement in the Treasury Department occurred, that there is a deficiency of $ 12,405 90, in this Fund. This circumstance may produce inconvenience, and prevent a compliance with the engagements entered into by the Board, unless a remedy be applied. This can be effected by legislative aid alone; and two modes present themselves, which are submitted to the consideration of the General Assembly.

The deficiency may be replaced and rendered available for the purposes required, by the passage of an Act authorising the payment of warrants, not exceeding in amount $ 12.405 50, drawn by authority of the Board of Public Works, out of any money in the Treasury, not otherwise appropriated, or by giving authority to the President and Directors of the Literary Fund to lend, and to the Board of Public Works to borrow, that sum. This last suggestion is made from a belief that the first named Fund has generally on hand a surplus equal to, or exceeding the amount required. It is confidently believed, that the sums subtracted from the Treasury, or either of the Funds mentioned, will before long be replaced, and as no hazard is incurred, it is respectfully recommended to the General Assembly to pass an Act, providing for the existing deficiency, by either of the modes mentioned, or in any other way, which in their wisdom may seem best.

A review of the state of the Fund will shew an improvement in its condition, and warrants the expectation of greater benefit being derived from it, than has for some time past been indulged. It will be perceived, that the aggregate amount of the Fund has been augmented by the sum of $ 38.077 50; but, what is a source of higher gratification, and gives promise of greater utility is, that the portion of the Disposable Fund yielding revenue, has been increased from $ 195,300. to $ 246,550. This faculty of the Fund, of annually increasing its capital, and of making its funds applied to one work of improvement, afford the means of encouraging and fostering other works, it may be expected, will be brought into more active operation in a short time. Many works that have been in progress of completion for years. several of which are of great importance, will be finished before long; when, in addition to the benefit derived from their use, some aid to the Fund, in the shape of revenue, may be calculated upon. Other works, either completed or in progress, exhibit improvement in their financial concerns, which gives stronger assurance of success than has heretofore been entertained. More full and satisfactory information in relation to the Companies alluded to, will be found in their respective reports, to which your attention is respectfully invited.

After the notice taken of the improvement of the Fund, it would not be proper to pass over in silence the burdens or disabilities under which it labors. In taking a view of the state of the Fund, more particularly its disbursements, the attention is arrested by the large amount of interest paid on the James River Company loans It will be seen, that while the whole amount of expenditure during the last year was $118,889 81, the amount of interest paid on account of those loans was $71,673 50; but, in order to form a correct opinion of the actual charge sustained by the Fund on account of this improvement, the receipts of the year should be viewed in connection with the disbursements. The whole amount of receipts within the same time, from every source, was $117,226 81; of which, the proportion derived from the James River and Kanawha surplus tolls, was $29,734 06. The difference between the amounts paid and received on this account, which is $41,939 44, constitutes the burden under which the Fund labors, and renders it by so much the less capable of dispensing the benefits which were with reason expected to be derived from its establishment. The only connection subsisting between the James River Company and the Board of Public Works, is that created by the Act of the General Assembly, charging the Fund for Internal Improvement with the payment of the interest on loans made for the benefit of that company. This would make it necessary, in each Annual Report of the Board, in which a view of its fiscal affairs is presented, to speak of the pecuniary concerns of that company, and place them in their true light before the Legislature. This has been done at each succeeding meeting of the General Assembly, since the compact formed between the Commonwealth and the James River Canal Company; but, the Board has been content to confine itself to that single object. It is doubted, however, whether the improvement of that important river, together with the influence it maintains over every other similar or kindred improvement, not only by the mode pursued, but through its connection with the Fund, has not claimed and required more special notice. Under the impression that it has, the Board will, with the respect and deference due to the General Assembly, under whose patronage and supervision the work has been conducted, present some farther views. It is acknowledged by all, that the improvement of the James River is highly important to the extensive and fertile country through which it flows; and the Board entertaining this opinion in its fullest extent, has seen with regret and concern, that it has for so long a time remained stationary. The interest of the district of country more immediately concerned, and the relief of the Fund from the burden imposed upon it, to which every other section of the State looks for support, in aid of their individual exertions, would seem to require and claim the attention of the Legislature. A mixed system of Internal Improvement, such as now exists, appears to have had the effect, by dividing the interests that should be united in support of a general system, of paralizing the exertions of every section of the State It would moreover appear, that the particular improvement which has enjoyed the special patronage of the General Assembly, has not advanced in a degree bearing a just proportion to the amount expended on it, whilst most other improvements have languished, or been deferred for want of support and encouragement in consequence of this expenditure. In connection with this subject, as it forms a part of the James River improvement, it will be proper in this place to take some notice of the work on the Kanawha River, to which the attention of the Board has been called by an Act of the General Assembly, and memorials of the citizens residing on, and more immediately interested in, the navigation of that river.

The improvement of this river, designed and planned by a former Engineer of the State, Mr. Moore, has been completed, and the work received by the Agent of the James River Company on the Kanawha section, from the contractors. It is now represented by the persons for whose benefit and convenience it was undertaken, and who almost exclusively are engaged in the navigation of the river, that instead of removing impediments, obstructions have been created, and that the river in its natural state, afforded safer and better navigation than is enjoyed since the improvement has been made. The facts of the case, as far as they can be, will be ascertained, and made the subject of a separate report. The view in which this subject presents itself to the Board, as connected with and having a bearing on the present system, is, that improvements of the kind here spoken of, undertaken and prosecuted at the sole expense of the State, seem to be considered in the light of public property, and should be made public highways, free of charge for their use. It cannot be believed, that if individuals more immediately concerned had been interested in the improvement in question, that the means employed to evade the payment of tolls, would have been resorted to, or if so, could have succeeded to the extent they have. The tolls on the Kanawha, under the existing tariff, are estimated at $8,000 per year, at least, but may be considered as nominal. The Board, in presenting their views on this subject, is influenced by the most sincere and earnest desire to see the improvement of the James River re-commenced, and conducted to a successful termination. It remains with the General Assembly to devise a scheme, and provide the means.

Another cause of embarrassment experienced in the management of the Fund, and which is believed to have produced a considerable expenditure, without the attainment of any commensurate benefit, results from the course of legislation pursued on the subjects of improvement, presented to the consideration of the General Assembly. It is very desirable that a system of improvement, applicable to roads more particularly, should be adopted, and pursued as far as may be practicable, which would have the effect to make each road form a link in a chain from the point of commencement to the utmost extent to which it may be carried. Improvements of this character are generally undertaken in the first instance in the neighbourhood of towns; and if, after the formation of the first, the second, and each one in succession, shall be located in continuation, the benefit of great highways, or turnpike roads, traversing the State in different directions, must be the certain consequence. If such a system is desirable, and the result would be, what is taken for granted, it can never be attained, so long as a decision favorable to an improvement petitioned for, is accompanied by a requisition on the Board to make a subscription. Improvements, in their nature local, and limited to neighbourhood convenience, must, under such a course, receive a portion of the fund designed for objects of more general utility, and it may be questioned whether, under certain circumstances, the object may not be so entirely local, that a sacrifice of the individual subscriptions, together with the State's quota, may not be a positive gain, confined, however, to those immediately interested. In such a case, the subscription from the Fund must be lost, and with it, all hope of a dividend.

In the remarks here submitted, the Board is influenced by no other consideration than a just regard to the interest of the Fund committed to their charge, and of the State at large, and is encouraged to make them from the satisfaction experienced, by seeing the same sentiment advanced by a committee of the General Assembly, in their report on the state of the office of the Second Auditor.

The charges payable out of the income of the Fund, during the present year, together with the interest on the James River Company loans, and expenses of surveys, &c., it has been stated, will absorb, in all probability, the entire income. The charges, however, are certain, while the receipts, as they must be, from the sources whence derived, are conjectural. While it is impossible, for this reason, to arrive at accuracy, it is very certain, that if any disappointment should be experienced, the inconvenience will be very inconsiderable, and but a short period of time, as the income of the next year is charged with the payment of $ 8,000 only, at present. There *will* be claims, however, on the revenue of that year, by companies recently chartered; but, in providing for them, care will be taken not to create heavier charges than can, with existing engagements, be complied with. The view herein presented, of the fiscal concerns of the Board, exhibits this very satisfactory result. that while the ability of the Fund has increased, and is likely to be advanced, the demands are less, and are diminishing.

During the past year, the Principal Engineer has been very actively employed in carrying into execution, resolutions of the General Assembly, and orders of the Board, and members ex-officio; in which period, though for a part of the time he was deprived of the aid of his assistant, his labors must have been severe and arduous, as will appear from his reports on various subjects, which are herewith submitted.

The reports received, are, on the connection of the Roanoke and James River; New River and Roanoke; a survey of the Rappahannock; the location of the Middle Turnpike Road; a survey from Middleburg to Strasburg; survey from Berry's Ferry to Strasburg; survey of a road from Harrisonburg to Franklin, and thence to Beverley; survey of a road from Staunton to Riffle's Run; the examination of the Piankitank River; the examinations of the Fauquier and Alexandria, Little River, Falls Bridge, Leesburg, Ashby's Gap Turnpike Companies, the Canal near Richmond, and the Blue Ridge Canal.

The reports and returns of the several Companies, to the capital stock of which the Fund has subscribed, are herewith communicated. They are:

The Ashby's Gap Turnpike Company,
Upper Appomattox Company,
Lower Appomattox Company,
Dismal Swamp Canal Company,
Fairfax Turnpike Company,
Fauquier and Alexandria Turnpike Company,
Leesburg Turnpike Company,
Little River Turnpike Company,
Lynchburg and Salem Turnpike Company,
Manchester and Petersburg Turnpike Company,
Potomac Company,
Richmond Dock Company,
Roanoke Navigation Company,
Slate River Company,
Staunton and James River Turnpike Company,
Shepherdstown and Smithfield Turnpike Company,
Snicker's Gap Turnpike Company,
Swift Run Gap Turnpike Company,
Wellsburg and Washington Turnpike Company.

All which is respectfully submitted.

WM. B. GILES, *President*
Board of Public Works.

23d *January*, 1829.

REPORTS AND RETURNS

OF

COMPANIES.

A BY'S GAP TURNPIKE COMPANY.

Your letter of November 11th came duly to hand, and ce of the advice given, a statement is annexed of the n of the Ashby's Gap Turnpike Company up to the 1st o onth. At a meeting this day of the Board of Presi Directors, it was ordered, that a dividend of profit to the date above named, should be made, payable ctly after the receipt of the balance due by the Board of Public Works, which I have drawn for in favor of the Cashier of the Bank of Alexandria. Two and a half per cent. was found to be the rate now distributable, and the State will be entitled to receive that dividend on 105 shares, the number paid for on 1st February last.

A. GIBSON, *Treasurer*
of Ashby's Gap Turnpike Company.

James Brown, Jr.
Second Auditor.

◆

State of the Ashby's Gap Turnpike Company, November 1st, 1828.

Capital stock subscribed:

By individuals,	1,190½	shares, at	$100,	$119,050 00
By the State,	140	do	"	14,000 00
				133,050 00

Aggregate of requisitions made by individual stockholders, full amount.		
Amount paid by individuals, all called for, in cash and good bonds.		
Amount due from individuals, in bonds and open accounts,		17,778 13
Amount paid by the Board of Public Works, on State subscription,		10,500 00

Note.—The last instalment of the State subscription of $7,000, was payable 1st February last. The State paid then only one half of it. The other half yet unpaid, but notice has lately been given, that the balance is now ready.

Amount expended on the work from its commencement, as per return made 1st February, 1828,		133,050 00
Debts due by the Company, to wit:		
To the Bank of Alexandria,	7,400 00	
Bank of Potomac,	9,000 00	
		16,400 00
For which good bonds are deposited for collection.		
To individuals, for dividends declared, which have not yet been paid,		1,695 47
Debts due to the Company, on account of stock subscribed for, viz:		
From Dr. Lewis Burwell, for which his bonds, with Nathaniel Burwell security, were taken and deposited in the Bank of Alexandria and Bank of Potomac, to cover debts due there,		16,400 00
From the Board of Public Works, the one half of the second instalment, which was payable on 1st February last,		3,500 00
Debts due, to the Company, other than on account of stock, viz:		
From Joseph Tuly,	100 00	
John Boyd,	65 66	
Nathaniel Burwell,	100 00	
Dr. Burwell's executrix,	811 66	
Col. Beveridge,	55 00	
		1,132 32

All good, and will be settled soon in dividends or otherwise.

From Thomas Chinn,	83 16	
Snicker's Gap Turnpike Company,	95 00	
Thomas Wrenn,	20 00	
John Underwood,	20 00	
Nathaniel Taylor,	27 65	
		245 81

These may or may not soon be collected.

Income for nine months, from 1st February, 1828, to the 1st of November of the same year, to wit:

From tolls,		4,124 48
From other sources,	Nothing.	

Expenditures during the same period, to wit: from 1st February, to November 1st, 1828:

Improvements and repairs on the road,		805 57
Building a toll-house,		571 73
Damages assessed to Joshua Hogice, for passing through his land,		100 00
Incidental expenditures,		28 96
Gate-keepers' wages,		672 66
Treasurer's commission on money received and paid out,	106 92	
His allowance for settling with gate-keepers,	25 00	
		131 92
Officers' salaries: Nothing, except to the Treasurer as above stated.		
Balance of money on hand,		324 26

Note.—A draft has been drawn on the Board of Public Works for $ 3,500, which has not yet been paid, but will be received in time to meet the next dividend.

Dividend of profits to the 1st of November, 1828, to be paid immediately after the money is received from the Board of Public Works, 2½ per cent. on all stock fully paid up on the first of February last, declared this day.

A. GIBSON, *Treasurer*
of Ashby's Gap Turnpike Company.

November 24th, 1828.

UPPER APPOMATTOX COMPANY.

To the President and Directors of the
Board of Public Works.

GENTLEMEN,

We now hand you our annual report, and beg leave, for particulars, to refer you to the enclosed papers, marked A. and B

Your obedient servants,

THO: A. MORTON,
RICHD: N. VENABLE,
NATHL: E. VENABLE,
JAMES MADISON.

* * *

A.

Return of the state of the Upper Appomattox Company, on the first day of September, 1828.

Capital subscribed by individuals,		$48,500 00
Do. by the State,		12,500 00
Aggregate of requisitions made on stockholders,		61,000 00
Amount paid by stockholders,		61,000 00
Amount due from do.	(nothing.)	
Amount due by Board of P. Works,	do.	
Amount expended in the work to August 31, 1823,	86,789 61	
Amount expended in the work from Sept. 1, 1823, to Aug. 31, 1825,	1,626 35	
Amount expended in the work from Sept. 1, 1825, to Aug 31, 1826,	1,573 62	
Amount expended in the work from Sept. 1, 1826, to Aug. 31, 1827,	8,355 73	
Amount expended in the work from Sept 1, 1827, to Aug. 31, 1828,	5,395 12	
		103,740 43
Debts due by the Company,	18,023 20	
Interest on said debts,	6,124 09	
		24,147 29

Debts due to the Company, of which may be considered ultimately good,	8,748 66	
Interest on the same,	7 90	
Bad and doubtful,	2,434 29	
Interest on ditto,	1,370 73	
		12,561 58
Income during the year ending Aug. 31, 1828, viz:		
From tolls, (from Dec. 4, 1827,)	2,177 72	
From rents, (from Dec. 4, 1827,)	719 03	
From other sources, (none.)		
		2,896 75
Expenditures for the year, from Aug. 31, 1827, to Sept. 1, 1828, other than for improvements and repairs, viz:		
Officers' salaries: Clerk and Collector of Tolls,	600 00	
Other expenditures,	379 55	
		979 55
Dividends declared, (none.)		
Balance of money on hand,		87 46

B.

Tolls of the Upper Appomattox Company, from 1*st September*, 1827, *to August* 31, 1828.

44	bales cotton,	Producing in tolls, $2,177 72
3,763½	barrels flour,	
5,812	bushels wheat,	
3,250	hogsheads tobacco,	
288	bushels corn,	
2,236	bushels salt,	
337,885	lbs. goods,	
415	tierces lime,	
1,012¾	kegs tobacco,	
16	bushels beans,	
14	loads wood,	

LOWER APPOMATTOX COMPANY.

PETERSBURG, December 29, 1828.

JAMES BROWN, JR.

SIR,

Your favor of the 23d instant, I received a few days ago, and in conformity to which, I now enclose you the report of the Lower Appomattox Company's affairs, which was made up to the meeting of our Directors, on the 29th of last month, but was some how, since omitted to have been forwarded, for which we have to apologize, and beg the Board of Public Works will excuse this first omission. In fact, we had no knowledge of the resolution passed at a meeting of the Board, on the 23d January last, nor did we advert to that section of the law which requires an annual report to the 7th December, but merely knew an annual report was required. For the information of the Board of Public Works, I deem it proper to remark, that the operations on our river have so far progressed and improved its navigation, that in a few weeks we confidently calculate on that depth of water which authorises the Company to draw toll.

With great respect,
Your obedient servant,
D. MACKENZIE, *President.*

* * *

Return of the state of the Lower Appomattox Company, the 29th day of November, 1828.

Capital stock subscribed:	
By individuals,	$24,000 00
By the State, or Board of Public Works,	16,000 00
Making the capital stock of	40,000 00
Amount paid by individual stockholders, including the corporation of Petersburg,	24,000 00
Amount due from individual stockholders,	(nothing.)
Amount due by the Board of Public Works,	16,000 00
Amount expended in the work from its commencement, as by the Treasurer's account to this date,	29,401 05

Debts due by the Company, borrowed of the Farmers' Bank,	7,000 00	
And to the town of Petersburg, paid a delinquency on one individual share,	20 00	
		7,020 00
Discounts paid for money borrowed at Bank,		77 67
Debts due to the Company, other than on account of stock, (nothing.)		
Incomes, nothing: No tolls yet charged, or rents, or other sources of income.		
Balance of money in hand,		1,520 50

Officers' salaries: To the Engineer, conditional, pending completing the work under his contract, $2,500 per annum, and a premium of $2,000: The Secretary and Treasurer, $150 per annum.

J. GRAMMAR, *Treasurer*
Lower Appomattox Company.

DISMAL SWAMP CANAL COMPANY.

In obedience to the requisition of the Board of Public Works, the Directors of the Dismal Swamp Canal Company have the honor to report upon the state of that Company up to the 30th of last month.

The Directors feel no ordinary satisfaction in communicating to the Board, that this long protracted work is now nearly completed: that in ten days from the date of this report, the water will be let into the Canal, and the navigation resumed. The operations on the Canal, during the year, have been extensive, as will be perceived by the amount of expenditures since the last report was made. The Directors have, however, the pleasure to say, that this large amount has not been expended without producing permanent and useful improvement.

A view of the operations on the Canal, and of the work generally, will be presented. The Directors were long since satisfied, that to make the Canal answer public expectation, and to be useful and profitable, it should be so deepened and widened, as to permit coasting vessels to pass through it. To this object the Directors have turned their undivided attention, and the Canal may now be said to be completed, having no where less than six and a half feet water in depth, and to be forty feet wide, except for a few miles, where, at the distance of every four hundred yards, recesses or turn-out stations have been constructed, which practically answer nearly as well as if the enlargement had been made. Great expense and delay have been created from the necessity imposed of changing the debouche at the south end of the Canal: The obstructions in Joyce's creek had so increased, that its navigation was almost impracticable. To clear out the obstructions, or to change the place of debouche, were the alternatives, and the latter has been adopted. Through a swamp studded with trees, of their primitive growth, of the largest size, and covered with water, a Canal of about thirteen hundred yards in length, thirty-two feet wide, and nine feet deep, has been constructed, and falls into Joyce's creek about four hundred yards from Pasquotank river.

At the south end of the Canal, a new stone lock has been constructed, one hundred feet in length, and twenty two feet in width. An intermediate lock, near the North west river, being of wood, has been taken up, and re-placed by one of stone, of the same dimensions of the one mentioned at the south end.

What is commonly called "the feeder," bringing the water from Lake Drummond to the Canal, has been widened and deepened, being now sixteen feet wide and four and a half feet deep, with a guard-gate near the Lake. This improvement, while it increases the supply of water in the canal, will facilitate the navigation from the western shores of the Lake.

By an Act of the General Assembly, passed 18th day of January, 1828, the Canal Company was authorised to open a communication between the Canal and the nearest navigable part of North west river, either by clearing out the river or by a Canal. The situation of the Company's funds did not justify the Directors in doing any thing on this lateral Canal, while the main Canal remained unfinished. In 1827, after the increased stock was subscribed and paid in, "the North-west Canal," as it is now termed, was commenced, and about sixteen hundred yards have been completed: about two miles more have been partially excavated, and about three miles more remain to be excavated.

During the present year, some further work has been done upon it, principally with a view to drain the water from the main Canal, in order to complete its excavation. It will be perceived, by the annexed statement, that the amount of the additional subscription, one hundred and fifty thousand dollars, has been expended. About forty thousand dollars will be required to complete the North west Canal, with stone locks. This being done, the Directors flatter themselves that the Dismal Swamp Canal, and the works appended, and upon it, will do credit to our State. This declaration the Directors would not make, but that it furnishes an occasion to render justice to Lieutenant Andrew Talcott, of the United States' Corps of Engineers. This officer has been engaged nearly two years in the superintendence of this work, and to his science, and unremitting attention, the Company particularly, and the country generally, are eminently indebted

The locks recently constructed, have been made to accommodate with the navigation of the Chesapeake and Delaware Canal. The locks formerly constructed, were ninety six feet in length, and eighteen feet wide. Should it hereafter be deemed expedient, the old locks can be enlarged, at a small expense, while the difference in cost between locks of the dimensions of the new and old locks was inconsiderable.

The Directors believe, the two outfalls of the Canal present valuable sites for milling and manufacturing purposes; the fall at the north end being fourteen feet, and the same at the south end, while Lake Drummond will furnish an inexhaustible supply of water.

The Directors are under the necessity of communicating a circumstance of a very unpleasant character, as regards the interest of the Company. Some years since, under the authorities of the Courts of Pasquotank and Camden counties in North Carolina, a bridge was constructed over the Pasquotank river, about a mile below the junction of the Canal and that river. Although this bridge was erected contrary to the law of North Carolina, and the compact between that State and Virginia, the Directors made no complaint or remonstrance, because no injury was done. Heretofore, the locks on the Canal were so constructed, that masted vessels could not pass through them. But, now that the locks and navigation are accommodated to admit coasting vessels to pass through them, this obstruction was too serious to be admitted. The Directors accordingly made application to the Courts of the two counties above mentioned, to construct a draw on this bridge. The Directors had not a doubt but this reasonable request would have received a prompt compliance: while the Court of Camden county promptly complied with the request, the Court of

Pasquotank refuses. In the compact between the two States, the river Pasquotank is especially named, as one of which the right of navigation to the citizens of Virginia is ceded, and that and other rivers made as common highways. This determination of the Court of Pasquotank county, has been recently made known to the Directors, and they have passed a resolution to make this circumstance known to the Executive of North Carolina, with a view to obtain a compliance of the compact between the two States.

JNO: COWPER,
JNO: TUNIS,
GEORGE M'INTOSH, } *Directors.*
JNO: TABB,

DISMAL SWAMP CANAL COMPANY,
Norfolk, Virginia, 1st December, 1828.

To the President and Directors
of the Board of Public Works.

◆

State of the Dismal Swamp Canal Company, on the 2d December, 1828.

Capital stock subscribed:			
By individuals,		$96,000 00	
The State of Virginia,		64,000 00	
The United States,		150,000 00	
			310,000 00
Debts due by the Company:			
To sundry individual loans,		12,944 23	
To the Board of Public Works, viz:			
Loan of	$50,000 00		
Do.	37,500 00		
		87,500 00	
To the loan of 500 shares U. States' Bank stock,		50,000 00	
To loan on 6 per cent. stock of the U. S.		60,981 24	
To loans at the Banks on personal security,		35,000 00	
Amount carried forward,		$246,425 47	

Amount brought forward,		$246,425 47	
To the Farmers' Bank, in account, exclusive of interest,		11 70	
To the Bank of Virginia, in account for interest,		426 68	
The Bank of the United States, account of the Board,	52 27		
Do. account current,	9 35		
		61 62	
John Grant, contractor,		39 95	
John Adams, do.		464 68	
C. Hammil, do.		90 00	
A. Talcott, Engineer,		377 38	
			247,897 48
Income:			
Amount of tolls on the 30th November, 1827,		144,091 44	
Collected since,		7,010 46	
		151,101 90	
Received from Yates & M'Intyre, for the four first instalments of lottery,		15,000 00	
			166,101 90
Profit to this day, on the investment in 6 per cent. stock, derived from dividends, &c. after deducting discounts paid on the loans obtained from the Bank, which profit is likely to increase by the dividend which will accrue in January, 1829,			6,412 95
			$730,412 33
Amount expended on the work:			
Real estate acquired,		3,734 60	
Old account of expenditures,		442,341 62	
Account of discount and interest,		71,093 67	
New account of expenditures,	146,768 37		
Paid French, Richards & Jordan, on account of stone,	3.262 10		
		150,030 47	
Carried forward,			667,200 36

Brought forward,		667,200 36
Amount due to the Company:		
By L. L. Savage, agent at South end,	2,190 89	
D. M. Curtis, toll-gatherer,	39 84	
		2,230 73
Amount of 6 per cent. stock of the U States, on hand, but pledged at the Bank of the U. S. in Norfolk, for loans to its full par value; and which stock is to be redeemed in January, 1829,		60,981 24
		$730,412 33

Officers' and servants' salaries and wages, the same rate, as reported last year.

A. FERET.

Norfolk, December 2d, 1828.

FAIRFAX TURNPIKE COMPANY.

CITY OF WASHINGTON, 2d December, 1828.

J. Brown, Jr. Second Auditor.

SIR,

I have the honor of stating below, the situation of the accounts of the Fairfax Turnpike Company, conformably to the form annexed to your favor of the 30th October last,

And am, respectfully,
Your obedient servant,
JOHN H. REILY, *Treasurer.*

* * *

Return of the state of the Fairfax Turnpike Company, on the 2d December, 1828.

Capital subscribed:	
By individuals and incorporated Companies,	$8,350 00
By the State, or Board of Public Works,	5,400 00

Aggregate of requisitions made on individual stockholders,		8,350 00
Amount paid by individual stockholders,		8,350 00
Amount due from ditto,	nothing.	
Amount due by the Board of P. Works,	nothing.	
Amount expended in the work from its commencement,		13,390 76
Debts due by the Company,	nothing.	
Debts due to the Company, other than on account of stock,	nothing.	
Income during the year ending 2d Dec. 1828:		
From tolls,		140 32
From rents,	nothing.	
From other sources,	nothing.	
Expenditures during the same period, viz:		
For improvements and repairs,		82 92
Officers' salaries,	nothing.	
Expenses in collecting tolls,		119 17
Other expenses, advertising,		2 62
Dividend, &c. declared, and when payable,	nothing.	
Balance of money in hand, 2d Dec. 1828,		359 24

E. E.

FAUQUIER AND ALEXANDRIA TURNPIKE COMPANY.

James Brown, Jr.

Dear Sir,

The absence of the Treasurer has prevented the full return of the Fauquier and Alexandria road. I hope he will be here in a few days, and enable us to fill the blanks,

And I remain, very respectfully,

Your obedient servant,

HUGH SMITH, *President.*

Alexandria, Nov. 29, 1828.

Alexandria, November 28, 1828.

James Brown, Jr.

In conformity to the Law of the Assembly of Virginia, I herewith transmit the annual report of the affairs of the Fauquier and Alexandria Turnpike Company,

And am, respectfully,

HUGH SMITH, *President.*

Amount subscribed,	$70,600 00	
Forfeited,	18,300 00	
		52,300 00
Subscribed by the Board of Public Works,		30,000 00
Amount paid by individuals,		62.651 00
Amount paid by the Board of Public Works,		30,000 00
Amount due by ditto,		nothing.
Amount due by individuals, which cannot be collected,		7,549 00
Capital expended on the road,		124.850 00
Amount of tolls, Nov. 1, 1827, to Nov. 1, 1828,		1,607 26
Expended out of tolls,		1,607 26
Superintendent's salary,		
Toll-keeper's do.		
Treasurer's, not yet settled by President and Directors.		
Amount debts due by the Company:		
Old debts, payable when repairs are paid up,	10,431 00	
Due Bank of Potomac, secured by tolls, and stockholders' indorsement,	18,315 00	
		28,746 00
Amount due to the Company, other than stockholders,		nothing.
Dividends,		none.

REPORT.

The operations for the past season have been directed to the continuation of the improvements of the M'Adam system. At the close of the year, it is believed that the road will be in excellent condition, except about three miles, which will be executed the following year.

The return of the debt due by the Company, does not include the amount which will be necessary to complete the service of the present year.

The President and Directors had no means of completing the work, except by loans secured on the tolls, and by some of the stockholders. The amount of capital entitled to dividend, is supposed to be $ 82,300; add the amount of debt, and the sum requisite to complete the improvements; the aggregate will be about $ 4,200 per mile.

The very rough state of the road has induced the President and Directors to demand little more than half the tolls allowed by law, and collected by the Little River Company, to which this is a tributary road. It is now proposed to collect the legal tolls.

The amount collected on the Little River road, for an average of thirteen years, is about $ 600 per mile for thirty three miles. If the receipts of the Fauquier and Alexandria road be one half this amount, the dividends to the stockholders might commence at an early period; but the debt being payable out of the tolls, will protract the time to a great distance.

With a view to accelerate this desirable period, and to make further improvements in cutting down hills, which the state of their affairs will not now justify, the passage of a law for a lottery has been prayed for. If granted and successfully operated on, the Company will soon be relieved from the heavy loss they have sustained. The improvement is highly beneficial to the country, but burthensome to the Company, and to the old creditors, who have been so long deprived of their just dues.

All which is respectfully submitted, by

HUGH SMITH, *President.*

LEESBURG TURNPIKE ROAD COMPANY.

Return of the Leesburg Turnpike Road Company, for the year ending the 1st July, 1828.

Capital subscribed:		
By individuals,		$50,400 00
By the State, or Board of Public Works,		33,600 00
Aggregate of requisitions made on individual stockholders,		50,400 00
Amount paid by individual stockholders,		47,810 76
Amount due from ditto,		2,589 24
Capital expended in the work,	all.	
Tolls received from 1st July, 1827, to 1st July, 1828,		2,894 80
Balance of tolls on hand last year,		783 00
Expenditures during the same period, for improvements and repairs:		
In part payment for a new bridge over Goose creek,	1,000 00	
Repairs to Broadrun bridge, road, &c.	1,494 77½	
		2,494 77½
Officers' salaries, expenses collecting tolls, &c.:		
Salary of President and four Directors,	216 33	
Two toll gatherers, $150 each,	300 00	
Superintendent of road,	170 00	
		686 33
All other expenses:		
Treasurer's commission for receiving and paying away,	60 00	
Printing, fuel, plank for culverts, &c.	99 97½	
		159 97½
Amount paid on account of debts due from the Company:		
To John M'Aleer & Co.		250 00
Dividends declared,	none.	
Debts due by the Company:		
To John M'Aleer & Co. for making road,		250 00
James M'Kendrick & Co. do.		53 34
Branch Bank of the Valley at Leesburg,		2,768 70

Debts due to the Company, other than from stockholders, and a small amount for tolls,	nothing.
Balance of toll-money on hand,	86 72

SAML: M. EDWARDS, *Treasurer.*

Leesburg, Dec. 6th, 1828.

LITTLE RIVER TURNPIKE COMPANY.

ALEXANDRIA, 1st month 5th, 1829.

J. Brown, Jr. Secretary to the
Board of Public Works, Richmond.

I now have the pleasure of handing to thee herewith, a copy of the report of the President and Directors of the Little River Turnpike Company, made to the stockholders in general meeting, on the 2d inst., when it was received and adopted. I also take the liberty of handing to thee, the report of our Superintendent of the road, which thou wilt observe the President and Directors refer to in their report, for more particular information, with regard to the operations upon the road.

In consequence of the great improvements made, and in progress upon the road, and the small amount of tolls received during the first three months of last year, the Board of Directors, at their meeting for dividend in April, found themselves restricted to two per cent., which dividend was declared, payable on the 4th of same month, of which due notice was given by advertising in the newspapers of Alexandria, Winchester, and Leesburg.

The tolls received for the last three months of the year 1828, have amounted to more than has been received in the same length of time for several years, and the prospect is now favourable for a dividend of four per cent. in April next.

I remain,

Very respectfully, thy friend,

PHINEAS JANNEY, *President*
Little-River Turnpike Company.

The President and Directors of the Little River Turnpike Company, respectfully report to the stockholders, that they have examined the Superintendent's and Treasurer's accounts and vouchers, and find that the receipts for tolls for the year ending 31st December, 1828, amount to		$ 18,104 39
To which add balance in Treasurer's hands, per his account for 1827,		452 63
And money borrowed from the Bank of Alexandria, to carry on improvements on the road during the summer months, when but little toll was received,		3,350 00
		21,907 02
And that there has been expended by Thomas Ayres, Superintendent, in repairs and improvements on the road, including his salary of $ 800, the sum of	$ 11,280 42	
Paid salaries of all the gate-keepers,	1,525 00	
President's salary, $ 150; 4 Directors, $ 75 each, is 300,	450 00	
Treasurer's commission, 2 per cent. on $ 18,104 39; do. 1 per cent. on $ 3,350,	395 58	
Compensation for collecting from gate-keepers,	40 00	
H. Clagett's bill for expenses of general meeting of stockholders,	36 00	
Clerks' and Attorney's fees, stationer's and printer's bills, postages, hack-hire and expenses of the President and Directors, per Treasurer's account,	69 22	
Discount paid at Bank of Alexandria,	59 53	
Dividends to stockholders, per Treasurer's account,	3,098 97	
Bank of Alexandria, balance due by last report, and what was borrowed this year	4,500 00	
		21,454 72
Leaving in Treasurer's hands, per his account rendered, a balance of		452 30
Carried forward,		$ 452 30

Brought forward,		452 30
Property belonging to, and debts due to the Company, as per Treasurer's list, leaving out bad and doubtful debts,		393 14
		845 44
The Company owes as follows, viz:		
To sundry persons for dividends, payable in stock at par,	394 92	
To do. payable in cash when called for,	923 87	
		1,318 79
Making a deficiency of		$ 473 35

The President and Directors would have been much gratified, by having it in their power to present to the Stockholders, a more flattering exhibit of the finances of the Company, but at the same time they feel much satisfaction in being able to say, that a great improvement has been made in the road, by cutting down several hills, taking up large stone and repairing with small, and on two miles that had originally been made with bad materials, a new covering of good hard stone, broken small, has been applied: for particulars of which, the Stockholders are referred to the Superintendent's report, herewith presented.

The receipt for tolls during the year 1828, has been $4,114 01 more than for 1827, and the expenditure has amounted to $2,471 more in 1828 than in 1827, owing to the great quantity of work done. The President and Directors have found it necessary to borrow money during the last summer, when the receipt of tolls was small, in order to push on the important improvements and repairs, all of which has since been paid out of the tolls received. The President and Directors respectfully recommend to the Stockholders, to continue in force the existing order, for the Board to make such dividend on the stock of the Company on the first day of April next, as the state of the funds may justify.

They further report, that they have memorialized the Legislature of Virginia, to alter the charter of the Company, so as to place this Company upon an equal footing with the other Turnpike Companies in the State, with regard to charging half toll upon return waggons, and that the memorial is now before the Legislature, not having yet been acted upon.

All of which is respectfully submitted.

(Signed,)

PHINEAS JANNEY, *President.*
CHARLES LEWIS,
REUBEN JOHNSON, } *Directors.*
GEORGE CARTER,

A true Copy,

JONAH THOMPSON, *Treasurer.*

Alexandria, January 2d, 1829.

To the President and Directors
of the Little River Turnpike Company.

GENTLEMEN,

Your Agent reports, that soon after his re-appointment, his attention was immediately called to the repair of the road, which, from the openness of the winter, had received considerable injury. The necessary repairs were made with all possible expedition, particularly those on the 29th and 30th miles; the covering of which being of slate stone, nearly all gave way: These were re paved as well as the weather would permit. The first mile also gave way, and a sufficient force was placed on it: Above one-half of it was re-covered with a coat of screened gravel, and it is now in a good state. On the 5th of May, a set of hands were employed to take up the road at Kaines' Branch to Cub Run, and three hills were reduced, one of which was a body of rock; and on the 26th of May, the hands employed at the gravel road were removed to operate between Beard's gate and Aldie, where the stone was lifted, broke and re-laid, and that part of the road is in good order, and a sufficiency of materials gathered to make the repairs for some years. This done, we commenced graduating the hill at Beard's, which we reduced from six to three degrees, and there remains about thirty yards at Broad Run to be completed in the Spring. Seven hills within the limits of the 29th, 30th and 31st miles, composed nearly altogether of rock, (particularly the two at Broad Run,) and had to be blown: These also have been reduced from 6 and 7 to 8 degrees, and completed by the 29th October. The lifting of the road from Kaines' Branch to Cub Run was accomplished by the 29th November, after which the hands were employed in covering the hills which had been reduced near Broad Run.

The contractors for the delivery of the stone on the 29th and 30th miles, having failed to comply with their contract, it became necessary to make arrangements to supply the defect, for which purpose eight waggons were employed upon advantageous terms to the Company. A considerable quantity of masonry work has been done in repairing tunnels and the two bridges at Broad Run. The parapet-walls remain uncovered, but plank has been procured for that purpose, and will be put on in the Spring. The whole of the covering of this section of the road is of iron stone, which is very durable. It may be proper to state, that there is now on every part of the road which has undergone repair, a quantity of materials for use in the Spring. The heaviest expense has been incurred on the 29th, 30th and 31st miles, in the lifting of the road, reducing of hills, procuring stone and re-covering.

The whole road, except 4½ miles between the 28th mile stone and Cub Run, is now in good repair, particularly that part from Cub Run to Kaines' Branch, which has a coat of six inches of stone.

During the past year, the sum of $10,480 has been drawn, and $10,461 99½ expended, leaving a balance of $18 to be accounted for.

In the disbursement of the money, the utmost care has been taken to apply it in the most advantageous manner for the benefit of the Company, and which I trust will be satisfactory.

With much respect,

Your friend,

THOMAS AYRES,

Superintendent Little River Turnpike.

True copy,

JONAH THOMPSON, *Treasurer*

Little River Turnpike Company.

January 1st, 1829.

LYNCHBURG AND SALEM TURNPIKE COMPANY.

LYNCHBURG, December 12, 1828.

James Brown, Jr. Secretary
of the Board of Public Works.

In conformity with the provisions of the Act of the General Assembly of Virginia, I herewith enclose the annual report of the Lynchburg and Salem Turnpike Company, shewing the state of their affairs. The Board have taken steps to appropriate the balance which may be received on account of the subscription for stock, to the extension of the road as far as the money received from that source will carry it.

I am, respectfully,
Your obedient servant,
WM. RADFORD, *President.*

* * *

Return of the Lynchburg and Salem Turnpike Company, on the first day of December, 1828.

Capital subscribed:	
By individuals,	$73,900 00
By Board of Public Works,	30,000 00
Aggregate of requisitions made on individual stockholders,	73,900 00
Amount paid by individual stockholders,	71,699 91
Amount due from ditto,	2,220 09
Amount expended in the work from its commencement,	101,134 75
Debts due by the Company,	561 37
Debts due to the Company, other than on account of stock,	806 28
Amount due from the Board of P. Works,	nothing.
Income during the year ending 1st Dec. 1828:	
From tolls,	6,075 19
From rents,	nothing.
From other sources,	nothing.

s during the same period, viz:

vements and repairs,	450 00	
ries:		
ıe Board of Directors,	80 00	
ntendent on the road,	250 00	
rer and Book-keeper,	202 24	
therer, 1st section,	300 00	
o, 3d ditto,	200 00	
Ditto, 4th ditto,	200 00	
Ditto, 5th ditto,	150 00	
		1,832 24
Stationery and p	7 96	
Clerks' tickets,	6 20	
Printing advertisements,	21 75	
		35 91
Dividend declared 12th June, [illegible], $3 on each share, payable at the same date.		
Balance cash on hand,		3,380 56
Dividend declared 12th December, 1827, $3 on each share, payable at same date.		

ALEXANDER TOMPKINS, *Treasurer.*

At a meeting of the President and Directors of the Lynchburg and Salem Turnpike Company, at Lynchburg, on the 12th December, 1828:

The within return was presented to the Board of Directors, which was approved and ordered to be recorded, and the seal of this Company to be affixed thereto.

JOHN M. GORDON, *Clerk.*

(SEAL.)

MANCHESTER AND PETERSBURG TURNPIKE COMPANY.

James Brown, Jr. Secretary
to the Board of Public Works.

SIR,

You will be pleased to receive the following, as the report of the Directors of the Manchester and Petersburg Turnpike Company, to the Board of Public Works.

Amount of capital subscribed, including that by the Board of Public Works,	$76,000	00
Paid by individual stockholders,	63,629	86
Amount paid by Board of Public Works,	8,000	00
Lost by insolvency,	4,521	00
Tolls received and due (being a very small part) from December 2d, 1827, to December 2d, 1828,	4,058	20
Total expenditures from the commencement to the end of 1828,	97,615	38
Debts due by the Company at the end of the year 1828,	10,971	70
Received, settled and paid away, including the tolls,	87,385	83
Annual salaries:		
To the Clerk and Accountant, including office rent, &c.	125	00
To two Toll-gatherers,	600	00

The tolls have lately been raised to their legal rate, but not long enough to test the effect that will arise out of this measure.

The stage-tolls, however, remain as before, $600 00 per annum.

The business to which the attention of the Directors is now principally turned, is the payment of the Company's debts. Although in about seventeen months their Bank debt has been reduced from $6,800 to $4,550, still the renewal of the notes when there are so many endorsers, is extremely troublesome to all; and to the Director who has the principal management of it, proves a source of most serious inconvenience and confinement. A great part of the residue of the debts is due to persons who can illy afford to lie out of their money, and suffer no inconsiderable hardship from the want of it. These evils were represented in very strong terms to the stockholders in the course of last year, with a view of raising a small contribution on loan from each, which would have paid the most pressing of their debts, but with the utmost exertions, only $920 could be obtained, and that principally from the town of Petersburg.

They have now applied to the Legislature for permission to sell at auction so many shares of their unsubscribed stock as will enable them to pay their debts, and they hope this course will meet the approbation of the Board of Public Works.

It will perhaps be said by some, that new purchasers will thus be placed on more favourable ground than the original subscribers. But it may be answered, that no means can be adopted by which the original stockholders will be placed on an equal footing with subsequent purchasers. Indeed, in private institutions for internal improvement, it almost invariably happens that the money advanced by the first adventurer is sacrificed in a much larger proportion than is likely to happen in the present instance. And the true question is, whether is it better to suffer a slight reduction in the value of their stock, and by so doing, get rid of all their pecuniary incumbrances and be enabled to render justice to their needy creditors, and then have dividends quickly arising; or, to wait for years before they can have any dividends, and in the meantime to be overwhelmed with the complaints of unredressed creditors, or tore to pieces with the costs of numerous suits that must be instituted against them? Besides, it will be in the power of the present holders of stock to prevent any serious sacrifice in the sale of the stock, by attending and purchasing themselves. And upon the whole, it is seriously believed, the sacrifice upon the stock thus sold, would have but an inconsiderable bearing upon that already subscribed, and that it would not be necessary to sell so many as materially to affect their average value.

With great respect, I am,

Your obedient servant,

JAMES HENDERSON, *President.*

December 4th, 1828.

POTOWMAC COMPANY.

Office of the Potowmac Company,
Georgetown, 5th August, 1828.

His Excellency Wm. B. Giles.

Sir,

In obedience to the instructions of the stockholders o the Potowmac Company, at a general meeting held on the 10t day of July, ultimo, I have the honor to transmit to you her with, under the seal of the Company, the several resolutions passed by them at that meeting. giving their assent to certain Acts of the Legislature of Virginia and Maryland, and of the Congress of the United States, having relation to sundry modifications of the Charter of the Chesapeake and Ohio Canal Company.

With very great respect,
I have the honor to be,
Sir, your most obedient servant,

J. MASON, *President*
Potowmac Company.

* * *

GEORGETOWN, 10th July, 1828.

At a special general meeting of the stockholders of the Potowmac Company, holden this day, at Semmes' tavern, previous notice thereof having been given conformably to law:

The meeting took into consideration the Acts amendatory of the Act incorporating the Chesapeake and Ohio Canal Company, and it was decided to vote separately on each of the Acts specially requiring the assent of this Company.

The Act of Maryland, entitled "An act to amend the 'Act incorporating the Chesapeake and Ohio Canal Company," passed at the December Session, 1826, of the Legislature of said State, was read, considered, and received the unanimous assent of this meeting.

The Act of Maryland, entitled "An Act further to amend the 'Act incorporating the Chesapeake and Ohio Canal Company," passed at the December Session, 1827, of the Legislature of said State, was read, considered, and the unanimous assent of this meeting was given thereto.

The following resolution was offered, and after consideration, was unanimously adopted:

Whereas, since the resolutions unanimously adopted at the general meeting of the Potowmac Company, holden on the 16th May, 1825, in relation to a surrender of the rights of the said Company to the Chesapeake and Ohio Canal Company, sundry Acts have passed the Legislatures of Virginia and Maryland, and the Congress of the United States, modifying in sundry particulars, for which reference may be had to the said Acts, the Charter of the said Chesapeake and Ohio Canal Company, in some of which Acts it is expressly provided, that they shall, prior to their operation, receive the assent and approbation of this Company; and in relation to others, the assent and approbation of this Company may, in construction of law, be deemed essential to their validity, in whole or in part:

Be it therefore unanimously resolved by this general meeting, That the assent and approbation of the Potowmac Company is hereby given expressly to each and all of said Acts, so far as the same may be deemed necessary to the validity or future operation of each and all of said Acts, in as full and perfect manner as if each and all of said Acts were herein specially enumerated and recited.

(Signed,)

JAMES KEITH, *Chairman.*

◆

Resolved, unanimously, That the President of the Potowmac Company be, and he is hereby required, to deliver to the Executives of the States of Virginia and Maryland, respectively, and to the Secretary of the Treasury of the United States, copies, under the seal of this Company, of the aforegoing declaration of assent and corporate act of the Potowmac Company, to the Acts therein referred to.

(Signed,)

JAMES KEITH, *Chairman.*

(SEAL.)

◆

OFFICE OF THE POTOWMAC COMPANY,
Georgetown, 11th July, 1828.

I hereby certify the aforegoing to be a true and faithful extract from the records of the proceedings of the Potowmac Company.

ROB. BARNARD, *Treasurer*
and Clerk Potowmac Company.

RICHMOND DOCK COMPANY.

RICHMOND, 5th December, 1828.

James Brown, Jr. Secretary
to the Board of Public Works.

SIR,

The dredging machine, with a force of between 50 and 60 hands, has been employed the whole of this year in deepening the extended canal, from the draw-bridge at 18th street, towards the lower locks, and it is hoped will complete all the excavation necessary in that distance before Christmas, if the weather continues favorable. In the belief that it will ensure to the Company for the future a sufficient supply of water, even in times of the greatest drought, a dam of a permanent character has been built at the upper end of the feeder of the dock. Experience having shewn that the gates of the lower lock were not sufficiently strong, others of greater strength and durability have been at considerable expense substituted. These comprise the heavy and material improvements of the year, and though briefly described, embrace an amount of work and accommodation that can be properly appreciated from personal inspection only: all objects of minor importance, affecting the general improvement of their works, have been also attended to by the President and Directors. The Treasurer's statement, hereto annexed, shews the amount of tolls which accrued from 30th November, 1827, to 1st December, instant, at eighteen thousand five hundred and thirteen dollars and eighty-four cents, realizing the continual increases in proportion to the conveniences and facilities afforded, which the President and Directors have all along anticipated.

Respectfully,

J. B. HARVIE, *President*
Richmond Dock Company.

Return of the state of the Richmond Dock Company, on the 1st day of December, 1828

Capital subscribed,	$250.000	00
Aggregate of requisitions made on stockholders,	250,000	00
Amount due by individual stockholders, (as heretofore reported and explained,)	4,615	93
Capital expended in the work,*	394,239	84
Tolls received from 30th November, 1827, to 1st December, 1828,†	18,513	84
Officers' salaries: Superintendent $1,000; Collector and Assistant $1,050; Clerk and Treasurer $500; Dock-master $500; Lock-keeper $250; and Overseer, (temporary) $360,	3,660	00
Debts due by the Company, other than the amount received on loan from the Board of Public Works,	44,860	63
Debts due to the Company, otherwise than on account of stock,	516	50

E. E.

HILARY BAKER, *Treasurer*
of the Richmond Dock Company.

---

* All expenses of whatsoever description are included.

† In the report of last year the tolls for November, 1827, were assumed at $1,300; they, however, amounted to only $1,279 52.

ROANOKE NAVIGATION COMPANY.

WELDON, N. C. 20th Nov. 1828.

SIR,

I herewith transmit to you, for the information of the Board of Public Works, the annual report of the President and Directors to the stockholders of the Roanoke Navigation Company, with accompanying documents.

I am, very respectfully,
Your obedient servant,

A. JOYNER, *Secretary*

J. Brown, Jr. Second Auditor.

Report of the President and Directors to the stockholders of the Roanoke Navigation Company.

The operations of the Company have been directed during the past year to the improvement of the Staunton River, commencing at the White Rock Falls, a little below Brook Neal, and have proceeded to the town of Salem, in the county of Botetourt, west of the Blue Ridge Mountain, embracing a distance by computation of one hundred and twenty-four miles. The report of the Superintendent, herewith submitted, will shew, that the whole of the distance between the points above mentioned, has been improved in a manner affording tolerable good and safe sluice navigation for batteaux. The particular manner in which this work has been executed, will more fully appear by reference to the report of the gentlemen entrusted with its execution, which renders it unnecessary to enter into any detail in relation to this part of the subject, in the present communication. It thus appears, that the navigation has been improved from the town of Weldon, at the foot of the Great Falls of the Roanoke, to the town of Salem, a distance of two hundred and forty-four miles; and from the information received from the President of the Dismal Swamp Canal Company, we have the fullest assurance that this important link in the chain of our internal communication with the sea-board, a distance of four hundred and thirty miles, is now, or very soon will be completed, and that many of the advantages likely to result to us from our labors, may be speedily realized, by the exercise of a due degree of energy on the part of those interested. On this occasion, the Directory may be permitted to congratulate the stockholders on the prospect of shortly deriving a profit from the capital expended, and a considerable diminution of the expenses hitherto incurred in the transportation of their produce to market, and they feel authorised to state, that a Company has been already organized in Norfolk, whose object is to afford facilities for the transportation of produce from Weldon to Norfolk, by establishing a line of steam and tow-boats, which will, in all probability, go into operation at an early period of the approaching winter. The Board of Internal Improvements of the State of North Carolina, have authorised Colonel A. Joyner, one of their body, to subscribe to the capital stock of this Company for 250 shares of the stock reserved in the charter obtained from that State, which has been done accordingly. We deem the subscription important, inasmuch as it will aid the Company in the further prosecution of the improvements still necessary to the final completion of our work.

The state of the finances of the Company will be fully disclosed by the report of the Treasurer, to which we beg leave to refer you.

(Copy,)

JAMES BRUCE,
President pro. tem.

15*th November*, 1828.

Report to the President and Directors of the Roanoke Navigation Company, by Samuel Pannill, Superintendent on Staunton river.

The undersigned begs leave to report, that in accordance with the views of the Board, as signified at their meeting in the month of November, 1827, the hands belonging to the Company have been employed on the Staunton river, from the White Rock Falls, a few miles below Brook Neal, to the town of Salem, in the county of Botetourt, where the river changes its name to that of Roanoke, comprehending a distance of one hundred and twenty-four miles. They have also been employed in rendering navigable Seneca creek, from its mouth 1½ to 2 miles, to the large stone manufacturing mill of Mr. Philip Payne, at the village of Marysville; in building five large batteaux; in doing some ditching for himself, when they could not be employed in the river, in consequence of high water, amounting to $ 316 65½; which sum has been carried to the credit of the Company, in his account current, and in ditching for Mr. Samuel T. Miller, amounting to $ 12 25, together with $ 1 87½ for hand hire, which will be accounted for by John Shaw, in settlement with him for his wages the present year. John Shaw and Beverley Weldon, have been continued in the service of the Company, and with the hands under their management, have acquitted themselves in a manner to my entire satisfaction. They reached Salem on the 11th of last month, with three boats, one of them being 62 feet long, and 8 feet 2 inches wide, and by driving staples, fastened them to Mr. Charles Johnston's mill-dam, at that place. The season for operating on the river has been very favourable, the hands remarkably healthy, and the progress made has fully equalled my most sanguine expectations. There is now tolerable good and safe navigation to and from Salem, and this important object has been effected to the great benefit, joy and gratification of the people in that region of country. There were a few places of considerable difficulty to overcome, particularly where the river passes through the Blue Ridge Mountain, but such was the spirit and determination of all concerned, that every difficulty was surmounted; the rough was made smooth, the crooked straight, and the work went on under the general impulse of cheerfulness and anxiety, to reach the long talked of town of Salem. This being accomplished, as before stated, they returned in safety to the head of Long Island, on the 27th of last month, which place they left about the 5th of June last, and are now employed in preparing their winter clothing, making some repairs on their boats, doing some small jobs of work at the White Rock Falls, and generally employed in the best manner, until the farther will and pleasure of the Board and Company be ascertained. About forty or fifty miles below Salem, there was an unimportant mill, the dam of which extended quite across the river. This mill was not of sufficient value to justify the owner, Mr. Franklin, in putting in a lock for the passage of boats, and it became necessary to remove the dam, which was done accordingly. There is also a valuable mill five or six miles below Salem, on the river, belonging to Mr. John Persinger. It was not deemed necessary at this time to interfere in any manner with this mill, as the owner has placed himself under an obligation to construct a good lock in the dam for the safe passage of boats, as early as possible. It was found necessary to trim over all the work done by Davis & Burd, in 1827, and to make some material alterations in their walls. This has been effected in a manner entirely satisfactory. Much has already been accomplished, and much remains to be done to complete our navigation; yet, I deem our prospects highly flattering, and I hope I shall not be deemed obtrusive, when I pray you to be of good cheer, continue in good spirits, and not to relax in your efforts until the last necessary stroke be made to the great and important work in which we have been so long engaged. Nature has certainly designed us for a great people, and we assuredly ought not to hesitate in doing what is incumbent on us, to fulfil the high destiny which awaits us, and to realize the reasonable hopes and expectations of our friends and country. I herewith render you my account for the last year, and a statement of the work done in the same time; also an inventory of negroes, tools, provisions, &c. belonging to the Company. There is but little, if any thing, due from the Company, except for wages. I have pleasure in stating that Mr. Charles Johnston has made to the Company a present of a nice barrel of flour, and a pair of buck's horns.

A barrel of whiskey has been purchased of Messrs. Shanks & Co.: the whole brought from the town of Salem, by water to Green Hill, and now at this place awaiting the orders of the Board or Company.

Respectfully submitted,

SAMUEL PANNILL.

The Company's hands have operated on Staunton river from White Rock Falls, a little below Brook Neal, to the head of Long Island, a distance of	15	miles,
From Long Island to Ward's bridge,	12	
Ward's bridge to Cheerlesses' ford,	17	
Cheerlesses' ford to Smith's mountain,	14	
Smith's mountain to Hale's ford,	20	
Hale's ford to Hardy's ford,	20	
Hardy's ford to the mouth of Tinker's creek,	10	
Tinker's creek to John Persinger's mill,	10	
Persinger's mill to Salem,	6	
Distance operated upon the present year,	124	miles,
From White Rock Falls to the town of Weldon,	120	
Total distance improved from Weldon, up Staunton river, to Salem,	244	miles.

* * *

Report of ANDREW JOYNER, *Treasurer, to the President and Directors of the Roanoke Navigation Company.*

The undersigned, Treasurer of the Roanoke Navigation Company, respectfully reports, that the balance remaining in his hands at the date of the last settlement of his account, on the 12th day of November, 1827, amounted to the sum of	$3,103 41
Since that period, he has collected from stockholders,	9,934 31
Carried forward,	$13,037 72

Brought forward,		13,037 72
Tolls collected on produce passed through the canal,		52 59
Refunded by Saml. Pannill, for error in his account last fall,		30 00
Irby Powell, for this sum advanced him by Mr. Pannill,		2 00
Cad. Jones, late Superintendent, for an unexpended balance in his hands,		3 89
Received of Saml. L. Lockett, for negro Isaac, sold Beverley Sydnor,		300 00
Brantly, for negro Toby, sold him by A. Joyner,		428 01
Costs expended in certain suits,		15 84
Discount on North Carolina Bank notes, collected from stockholders,		66 60
Refunded by Saml. Pannill, Superintendent, for balance remaining in his hands on settlement this day,		1,381 22
Aggregate sum to be accounted for,		15,317 87
And that within the period aforesaid, the following disbursements have been made from the Treasury:		
Expenditures on Staunton river,	$1,907 11	
Advanced to Saml. Pannill, Superintendent,	6,910 88	
Expenditures on Roanoke river below Weldon, last Fall,	971 11	
Re-building abutment at lower waste on canal, and charged to Palmer & Davis,	12 00	
Repairing locks, canal, &c.	347 15	
Building wall at entrance of canal,	67 56	
		10,215 81
Balance in the Treasury on settlement this day,		$5,102 06

A. JOYNER.

5th November, 1828.

Return of the state of the Roanoke Navigation Company, on the 5th day of November, 1828.

Capital subscribed by individuals,			$282,000 00
by the State of Virginia,			80,000 00
by the State of N. Carolina,			50,000 00
			412,000 00
Aggregate of requisitions on stockholders,			412,000 00
Amount paid by stockholders,		360,902 15	
Amount due from individual stockholders,		26,097 85	
Amount due from the State of N. Carolina, for stock subscribed this day,		25,000 00	
Amount due from the State of Virginia,		000 00	
			412,000 00
Amount expended in the work to 12th Nov. 1827, including real estate, and negroes purchased for the Company,		357,156 57	
Expended during the year ending 5th Nov. 1828, viz:			
For improvements on Staunton river,	1,907 11		
Expended on Roanoke, below Weldon, last year,	971 11		
Repairing locks, canal, &c.	359 15		
Building wall at entrance of canal,	67 56		
Advanced to Sam'l Pannill, Superintendent on Staunton river,	6,910 88		
	10,215 81		
Deduct amount re-funded by S. Pannill,	1,381 22		
		8,834 59	
Total expended in the work from its commencement,			365,991 16

Debts due by the Company,		2,150 00
Debts due to the Company,		650 40
Income during the year, from tolls,	75 12	
Deduct expenses collecting tolls,	22 53	
		52 59
Officers' salaries:		
Superintendent on Staunton river,	650 00	
Treasurer,	350 00	
Secretary and Superintendent on canal,	350 00	
		1,350 00
Balance of money in hand,		5,102 06

No dividend has been declared.

A. JOYNER, *Treasurer.*

SLATE RIVER COMPANY.

Return of the state of the Slate River Company, on the 29th day of November, 1828.

Capital subscribed:		
By individuals,		$ 13,100 00
By the State, or Board of Public Works,		6,900 00
Amount of 1st requisition on individual stockholders, at $ 20 per share,		2,620 00
Amount of 2d requisition on individual stockholders, at $ 12 per share,		1,572 00
Amount of 1st requisition made of the Board of Public Works, being 25 per cent. on the stock,		1,725 00
Amount of 2d requisition made of the Board of Public Works,		483 00
Amount paid by individual stockholders,		3,670 33
Amount due from ditto,		520 67
Amount expended in the purchase of five negro men,	1,900 00	
And other sums expended in the work from its commencement,	3,755 23	
		5,655 23

Debts due to the Company, other than on account of stock, viz:	
From hire of 4 negro men, not ascertained,	
Balance of money in hand,	460 85
Debts due to the Company, other than on account of stock,	nothing.

The foregoing report furnishes a statement of the financial condition of the Slate River Company.

In consequence of a decision of the Court of Appeals, between the Messrs. Crenshaws and the Slate River Company, we have been compelled to stop prosecuting its navigation further for the present.

The Court of Appeals have decided, that the law incorporating the Company, so far as it compelled the owners of mills to put locks in their dams, was unconstitutional and void: that the Company were bound to put locks in at their own expense, and to pay the mill-owners for all damages occasioned *thereby*; and from the ambiguity of the decision, it is doubted whether the Company can put locks in the dams, without the further consent of the mill-owners. This decision of the Court of Appeals, is believed by the Company, to be unjust and illegal, and contrary to all the policy heretofore pursued by the Legislature of Virginia, in relation to Internal Improvement, and such as they are not willing to submit to. The only alternatives left them, are, to endeavour to reverse the decision in the Supreme Court of the U. States, if that Court will take jurisdiction, or to put locks in the mill-dams at their own expense, (if the mill-owners will consent,) or abandon the whole works under that nefarious decision, after an expenditure of seven or eight thousand dollars; when all their works were nearly complete, and ready for navigation, but for the obstructions of the mill-dams. The Company have not decided what course to pursue: they are still in hopes the Legislature may carve out some remedy for such enormous decisions; or, that in the event of a Convention, some remedy may be afforded, to decisions so manifestly unjust, impolitic and unconstitutional.

All of which is respectfully submitted.

ARCHIBALD AUSTIN,
President of the Company

Samuel Ford, *Secretary*.

STAUNTON AND JAMES RIVER TURNPIKE COMPANY.

To the Secretary of the Board of
Public Works, Richmond.

In pursuance of your letter of the 30th October, communicating a resolution of the President and Directors of the Board of Public Works, I send you herewith, a return of the state of the Staunton and James River Turnpike Company.

The whole road has been completed, with the exception of some places which we find it will be necessary to gravel: this, we are required under the Act of Incorporation to do; and we have now an overseer, with hands employed in gravelling such places as the experience of the past has pointed out was necessary.

Very respectfully,
Your most obedient servant,
Wm. KINNEY, Jr. *President.*

◆

A return of the state of the Staunton and James River Turnpike Company, on the 22d day of November, 1828.

Capital stock subscribed:		
By individuals,		$30,000 00
By the Board of Public Works,		20,000 00
Aggregate of requisitions made on the stockholders,		30,000 00
Amount paid by individual stockholders,		23,209 53
Amount due by ditto,		6,790 47
Amount due from Board of Public Works,		6,250 00
Amount expended in the work from its commencement, and paid as follows:		
To contractors, including interest,	$27,162 32	
To Engineer, damages, Clerks' and Sheriffs' fees, interest, toll-houses, gravelling and other permanent improvements, &c.	10,694 83	
		37,867 15

Amount of balances due to contractors, including interest,		6,291 17
Debts due by the Company for loans, including interest,	3,362 19	
Debts due by the Company, and not ascertained, will probably be,	800 00	
		4,162 19
Income during the half year ending the 14th January last:		
From tolls,		1,590 21
Officers' salaries:		
To toll-gate keepers,		190 21

The Secretary and Treasurer, (who is the same person,) 2½ per cent. on the amount of all receipts, in lieu of all other compensation for his services.

Dividend of 4 per cent. on $ 30,000, the capital stock held by individuals, and $ 5,000 of the stock held by the State, from the 15th day of July, 1827, to the 14th day of January, 1828, being six months; the dividend due the stockholders, to be deducted out of the last requisition made on them: no dividend has since been declared.

Balance of money on hand the 22d day of November, 1828, $2,063 03

E. E.

NICH: C. KINNEY, *Treasurer*.

SHEPHERDSTOWN AND SMITHFIELD TURNPIKE COMPANY.

SHEPHERDSTOWN, November 28, 1828.

James Brown, Jr. Second Auditor.

SIR,

I herewith transmit to you a return of the state of the Shepherdstown and Smithfield Turnpike Company's financial concerns, to November 1st, 1828. I am authorised to state, that the road is in a progressive state of forwardness towards completion. Your's respectfully,

JAMES M'MARRAN,
Secretary to the Board of Directors.

* * *

Return of the state of the Shepherdstown and Smithfield Turnpike Company, to November 1st, 1828.

Capital subscribed;		
By individuals,		28,111 75
By Board of Public Works,		18,575 00
Aggregate of requisitions made on individual stockholders,		28,111 75
Amount paid by individual stockholders,		28,111 75
Amount paid by Board of Public Works,		8,127 50
Amount due from individual stockholders, nothing.		
Amount due from Board of Public Works,		10,447 50
Amount expended in the work from its commencement,		36,239 25
Debts due by the Company,	nothing.	
Debts due to the Company, other than on account of stock,	nothing.	
Income during the year ending Nov. 1st, 1828:		
From tolls,		374 42
From rents,	nothing.	
From other sources,	nothing.	
Expenditures during the same period, viz:		
For improvements and repairs,		
Officers' salaries:		
Secretary and Treasurer,	23 00	
Gate-keeper,	64 86	
Printing,	3 00	
Lawyers' fees,	20 00	
		110 86
Balance of money in hand, including balance in hand of last report.		571 22

SNICKER'S GAP TURNPIKE COMPANY.

Berryville, November 24th, 1828.

Dear Sirs,

Herewith, you will find a return of the state of the Snicker's Gap Turnpike Company, on the 8th day of April, 1828.

Your obedient servant,

TREADWELL SMITH, *President.*

To the President and Directors
of the Board of Public Works.

◆

Return of the state of the Snicker's Gap Turnpike Company, on the 8th day of April, 1828.

Capital subscribed:		
By individuals,		$ 64,375 00
By the State, or Board of Public Works,		20,000 00
Aggregate of requisitions made on individual stockholders,		64,375 00
Amount paid by individual stockholders,		63,254 46
Amount due from individual stockholders,		1,120 54
Amount due by the Board of Public Works, nothing.		
Amount expended in the work from its commencement, exclusive of funds from Board P. Works,		83,438 44
Debts due by the Company,		15,639 23
Debts due to the Company other than on account of stock,	nothing.	
Income during the year ending 8th April, 1828:		
From tolls,		1,738 14
From rents,	nothing.	
From other sources,	nothing.	
Expenditures during the same period, exclusive of funds from Board of Public Works:		
For improvements and repairs,		815 00
Officers' salaries: Treasurer's commission,		34 76
Expenses collecting tolls: Gate-keepers' salaries,		240 00

Other expenses:		
For the Board at the several meetings,	27 87	
For printing,	3 25	
For postage,	93	
For surveyor's fees,	2 12	
For writing paper,	75	
		34 93
Dividend declared, and when payable,	none.	
Balance of money on hand,		$42 03

A true copy from the Books of the Company.

N. C. WILLIAMS, *Treasurer.*

SWIFT-RUN GAP TURNPIKE COMPANY.

OFFICE OF THE SWIFT-RUN GAP TURNPIKE COMPANY,
Fredericksburg, December 4, 1828.

James Brown, Jr.

SIR,

I enclose herein the annual return of the Swift-Run Gap Turnpike Company.

Very respectfully,

Your most obedient servant,

WM. ALLEN, *Secretary and Treasurer.*

* * *

Return of the state of the Swift Run Gap Turnpike Company, on the 4th day of December, 1828.

Capital subscribed:		
By individuals,	$ 69,700 00	
By Board of Public Works,	46,000 00	
Commonwealth of Virginia,	4,100 00	
		119,800 00
Aggregate of requisitions made on individual stockholders,		69,700 00

Amount paid by individual stockholders,	68,759 00
Amount due from individual stockholders,	941 00
Amount due by the Board of P. Works,	nothing.
Amount expended on the road from its commencement,	130,020 07
Debts due by the Company:	
To sundry persons, for the surplus of their stock, which was sold for the instalments due thereon,	186 23
To sundry persons, for negroes hired to work upon the road the present year,	160 00
Debts due to the Company, other than on account of stock,	nothing.
Income during the year ending 4th December, 1828, from tolls,	4,460 86
Expenditure during the same period:	
For improvements and repairs,	848 56
Officers' salaries: Secretary and Treasurer,	100 00
Overseer,	200 00
Expenses collecting tolls: 1 Gate-keeper,	200 00
1 ditto,	150 00
All other expenses,	nothing.
Dividend declared, payable 13th January, 1828,	2,583 00
Balance of money on hand,	2,268 98

Road finished 36 miles, which is in good order.

WM. ALLEN,
Secretary and Treasurer.

TYE RIVER AND BLUE RIDGE TURNPIKE COMPANY.

Return of the state of the Tye River and Blue Ridge Turnpike Company, on the 11th of December, 1828.

Capital subscribed:	
By individuals,	$3,600 00
By Board of Public Works,	nothing.
Amount paid by individual stockholders,	3,600 00
Amount due from ditto,	nothing.

Amount due from the Board of P. Works,	nothing.
Amount spent in the work from its commencement,	5,100 00
Debts due to the Company,	nothing
Debts due from the Company,	1,500 00
Income during the year ending the 1st of December, 1828: from tolls and rents, after paying the expense of repairing the road, the toll-collector's wages, &c.	95 00

* * *

To Mr. James Brown, Jr. Secretary
to the Board of Public Works.

Sir,

Annexed, you will receive a statement of the pecuniary condition of the Tye River and Blue Ridge Turnpike Company.

When the law was first enacted, authorising and requiring the Board of Public Works, to subscribe $ 2,500 to the stock of said Company; a majority of the stockholders (who had incurred an individual debt of $ 1,500, for the purpose of so far completing the road, as to render it tolerably passable,) conceived it impolitic to receive the subscription of the Board of Public Works, alleging their unwillingness to surrender the tolls of the road, which under the then existing state of things, they could apply exclusively to the payment of the interest and extinguishment of the debt above mentioned.

Since that period, finding that the present unfinished state of the road, will preclude the possibility of collecting a sufficient quantum of tolls, to reimburse the said stockholders, as they at first anticipated, and moreover, seeing that the Act of the Legislature authorising the subscription, forbids any part of the money being applied to the payment of the Company's debts, I am authorised to say, that the money when subscribed and received by the Company, will be expended exclusively, and to the best advantage in finishing the road.

Some five or six of the stockholders of said Company, in the summer of 1824, for the purpose of enabling the Company to commence the collection of tolls, applied $ 500 of their individual money to the purchase of a lot on the south side of the mountain, and the erection thereon of comfortable houses, (for the accommodation of a toll-collector.) The houses are of the following description, viz: one dwelling-house, well built of hewed logs, with two comfortable rooms below, and two half-story rooms above; also a good stone chimney, a kitchen, meat-house, stable and hatter's shop. The deed for this lot was made to the individuals who paid for it, and the Company has annually paid to said individuals, out of the tolls arising from the road, an interest of six per cent. on the $ 500 vested in the lot and buildings.

The facilities which those houses afford, have enabled the Company to employ a toll collector (who keeps a house of entertainment and hatter's shop) for the inconsiderable sum of $ 20 per annum; and the Board of Directors are of opinion, that when the road is made good, and thereby rendered vastly more public than it now is, they will be enabled so far from giving a compensation to the toll gatherer, to receive some rent for the houses in addition to the service of collecting the tolls. I will suggest the propriety of the Company's purchasing this lot and buildings, (by paying a sum not exceeding its original cost,) as being more advantageous than purchasing another lot, and erecting suitable buildings thereon.

The Company sanguinely believe, that when the road is cleared to an equal width, by blowing out the rocks that now in many places render it very narrow, and in other respects put in good order, that the tolls will so far increase, as to pay an interest of from four to six per cent. on the capital of $ 6,000.

The surplus of the tolls, after paying the interest on the $ 500 vested in the toll houses, &c. has been heretofore applied to the interest of the $ 1,500 due from the Company.

The gate on the north side of the mountain, has been rented to George Hight at $ 45 per annum, for a term of five years, which lease will expire in October, 1830, after which, the profits arising from that gate, must be vastly increased.

I am, Sir,
Very respectfully,
Your obedient servant,
Wm. MASSIE, *Treasurer.*

WELLSBURG AND WASHINGTON TURNPIKE COMPANY.

Return of the state of the Wellsburg and Washington Turnpike Company, on the 26th day of Nov. 1828.

Capital subscribed:		
By individuals,		$11,650 00
By the Board of Public Works,		5,000 00
Aggregate of requisitions made on individual stockholders,		11,650 00
Amount paid by individual stockholders,		9,978 56
Amount due from ditto,		1,973 47
Amount due from the Board of Public Works,		000 00
Amount expended in the work from its commencement,		13,747 34
Officers' salaries: Superintendent, $300, Treasurer. $328, and Clerk, $300,		928 00
All other expenses: Attorneys', Clerks' and Sheriffs' fees, paid by the Company,	250 24	
Deduct part of ditto, subsequently collected of defendants,	8 44	
		241 80
Debts due by the Company:		
To the Clerk of this Board,		152 54
Debts due to the Company, other than on account of stock,		000 00
Income during the year of 1828,		000 00
Expenditures during the same period, viz:		
For improvements: A contract not yet completed, and of course *not yet paid*,		118 00
Officers' salaries for the same period,		000 00
Expenses collecting tolls,		000 00
Other expenses,		000 00
Dividend, &c.		000 00
Balance of money in hands of Treasurer,		213 96

The above is a true statement of the state of this Company. Nothing has been done within the last year towards the completion of the road, further than to keep it in such a state of repair as to preserve what has been done, until some means can be devised, by which we would be enabled to finish and toll it.

Given under our hands, the 26th day of November, 1828.

JOSIAS REAVES.

WM. PATTON, *Clerk.*

The President and Directors of the Board of Public Works.

REPORTS

OF THE

PRINCIPAL ENGINEER,

OF HIS

OPERATIONS IN THE YEAR 1828.

SUMMARY REPORT.

RICHMOND, January 15th, 1829.

To the President and Directors
of the Board of Public Works.

GENTLEMEN,

As soon as the protracted rains of last Spring would permit, I set out for the Nottoway: There, after fruitless attempts to procure a boat and hands, I found that I should have to return to Petersburg for this purpose. In the mean time, heavy rains caused a considerable freshet in the river, and, according to appearances, as well as by the informations I collected, I was convinced that a survey and examination of the river would be rendered impracticable for some time, by the inundation in the flats I concluded, therefore, to put off this operation to the fall, when the stream is usually low.

I then repaired to the Rappahannock, which I surveyed; and I addressed an account of my operations and conclusions to the President of the Company. Thence I went to Alexandria, and attended to the location of the Middle Turnpike.

After having completed these two operations, I successively surveyed the routes from Berry's Ferry to Strasburg; and also from Middleburg to the latter place; and afterwards the route from Harrisonburg to Franklin, and thence to Beverley.

I next was engaged upon the ground between the Roanoke and James River, with a view to their connection. The dependence of this scheme upon the improvement of Roanoke itself, rendering it expedient that both surveys should proceed together, the enquiries relative to the connection of New River and Roanoke, were conducted at the same time: The operations relative to the improvement of the latter, were carried down as far as Salem, where they stopped for the season.

About the middle of September, my assistant, Mr Wilson M. C. Fairfax, had received an appointment on the Ohio and Chesapeake Canal, and left me. I lost no time in writing to several of my friends for their aid in procuring another, but as yet I have been unsuccessful. This circumstance, by increasing my own share of the usual operations preparatory to my yearly reports, did not leave me time to visit the Nottoway, after the late disappearance of sickness in that quarter last Fall. I concluded the operations of the year, by the examination of the Piankitank.

I herewith submit to your Honorable Body, my reports on these various subjects, together with accounts of my examinations of several works already completed, which I had an opportunity to visit during the season.

The Maps illustrative of the surveys, have been considerably retarded by the want of assistance: They are in progress.

I have the honor to be, gentlemen,

Your most obedient servant,

C. CROZET, *Principal Engineer*.

REPORT

ON THE

IMPROVEMENT OF THE RAPPAHANNOCK.

At the time I surveyed this river, it was low, though not down to its summer stage: it is thought to keep at least as high for an average of nine months in the year, during which the improvement contemplated will afford suitable navigation.

The law fixes Fox's mill on the North branch of this river, (by some also called Hedgeman's river,) as the head of navigation; I viewed it, however, as high up as Hart's mill, six miles above, up to which it is fully as susceptible of improvement as at Fox's mill. I was also assured, and appearances warrant the assertion, that the navigation could be extended still farther. Here this extension would be particularly advantageous, the country bordering on the upper being more fertile than that on the lower section of the river; and besides, by approaching nearer to the mountains, a more decided direction would be given to part of the trade of the valley, whose most convenient market is evidently Fredericksburg. The survey, however, was confined to the distance fixed by law.

No where is the improvement of a river more needed than here: through the country it traverses, the roads, in ordinary wet weather, become utterly impassable, and the ground is of such a nature as not to allow of their being made good, without a greater expense than would improve the navigation. And yet, even under present circumstances, a great deal of trade seeks the Fredericksburg market, from the Shenandoah valley, and nearer districts.

In its present condition, the river is obstructed by shoals and bars, and intersected by mill-dams. All circumstances considered, the improvement that appears most eligible to overcome these obstacles, is of a mixed kind; a few sluices, dams and locks, and occasionally short canals. For, from the nature of the river and of the trade, and also considering the limited extent of the funds that can be appropriated to this object, a navigation on a small scale only can be attempted.

The existing dams on the Rappahannock, are generally built of stones, forming a heavy dry wall, bound together by logs or poles extending through it, from the rear to the front. The upper slope of this triangular mass of stone is covered with close poles, which protect it against injuries from freshets. These dams are firm, but not tight, and could not subserve the purpose of navigation on a river, where water is scarce, even for the mills. The new dams should be built upon a different plan, of framed timber and stone, made perfectly water tight.

All the dams now existing, will ultimately have to be rebuilt. Then, if the millers did not wish to incur the expense, it would, I think, be advisable for the Company to do the work, for which it would be amply compensated, by a rent from the millers, and by the advantage of possessing the management of every part of the improvement. Both parties would find their account in this arrangement.

I would recommend the locks to be made of wood alone, when in a canal; but, if exposed to the current, they ought to be strengthened by stone walls.

It will be sufficient to make the locks 7½ feet wide, and 60 feet long in the clear: it being contemplated to prepare the navigation for boats only of the size of the James River batteaux.

The depth of navigation cannot well be more than eighteen inches. In some places, I have recommended that it should be given by making sluices, which, however, would not afford this depth in drought. But, here it must be considered, that the mills having a prior right to the water, they would stop the navigation, long before the sluices, where purposed, would get too shallow. Hence their getting shallow in droughts would not affect the navigation: were it not for this particular consideration, they should be proscribed from this, as well as from every river improvement; and even here, were it not for economical views, I should greatly prefer dams

The river having formerly been surveyed and mapped by Mr. L. Baldwin, I confined my operations to such measurements only as had an immediate bearing on the intended works. The following is an exhibit of the relative situation of the principal points:

Distances and Fall from the head of Lee's Pond, at Fox's Mill.

	Miles.	*Chains.*	*Feet.*
To the top of Lee's dam,	1	62	0.40
To the water below the wheel,			6.80
To Freeman's ford,			10.97

	Miles.	*Chains.*	*Feet.*
To the head of the Falls at Hedgeman's hole,			15.05
To the foot of do			16.46
To the head of the Fall at Beverley's Ford,	6	7	18.73
To the foot of do. and head of Martin's pond,			20.23
To the water below Martin's dam, and head of Calhoun & Wheatley's pond,	8	51	26.39
To Wheatley's dam, at the head of the Great Falls,	11	45	26.89
To the foot of the Great Falls at Brannen's ford,	12	72	68 57
To the mouth of Mountain run,			76.83
To the head of Snake Castle Falls,	20	65	84.88
To Barnett's ford, head of Skinker's pond,	21	48	99.03
To deep water below Skinker's mill, where the canal should terminate, just above a small run,	23	62	111.63
To the mouth of Deep run,	25	22	117 20
To the head of Strother's old race,			130.91
To the head of Major Richards' intended mill pond,			134.16
To his dam site,			138 51
To his ferry,	27	19	147.85
To the mouth of the Rapidan, or Point of Fork,	28	8	151.68
To the head of the Falls just above Barrow's ford,			168 38
To the ford,	29	45	177.21
To the head of the long pond just below do.			179.85
To Banks' dam,	37	7	199.61
To Banks' ford and ferry,	37	65	211.18
To the beginning of the Falmouth Falls, proposed dam site, and beginning of the Fredericksburg canal,	40	2	222.64
To the Forge mill-pond and race,	40	6	225.24
Assumed level of the canal,			220.68
Highest point through which deep cutting is necessary,	41	18	218 24
Basin at Fredericksburg,	42	19	
Lawrence's dam,			240.48
Thornton's do.			247.16
Tide-water at the New bridge,	43	16	271.81
Falmouth race,			242.24

The head of the pond formed by Lee's dam reaching up to Fox's ford and mill, is properly the beginning point of the intended navigation: it is quite accessible to waggons, there being a road running for some distance along the river

The first obstacle to be overcome, therefore, is Lee's dam, which should be passed by a lock on the left side, close to the mill wheel.

For a lock in Lee's dam, $1,150

Lee's dam is built of stones and poles, and leaks much.

Below this, down to Beverley's ford, the water is frequently shallow: sluices might be opened, but would cost probably as much as, and be less advantageous, than dams.

For two low dams and locks, 2,700

This is preferable to a high dam, and raising Martin's dam.

Just below Beverley's ford, Martin's pond begins: the dam is in very bad order, and will have to be re-built. The best plan to pass it is by a lock close to the mill on the left side.

This lock, with its appendages, may cost 1,600

At the site of the lock, the refluent water of Wheatley's pond begins. The dam is built at the head of the most considerable fall in the river. A fine navigable race has been made for some distance on the south side; it terminates a little above Wheatley's toll bridge.

After mature consideration of all the difficulties presented here, which are great, the south side is recommended for a canal in prolongation of the race just mentioned. This canal should be 2½ feet deep and 20 feet wide; a narrower canal, with occasional passing places, would be cheaper, but is not advisable.

For the canal with guard-gates, wastes and bridges, 3,63

The fall from Wheatley's pond to Brannen's ford being 41.68 feet, will require 7 locks.

For lockage, 4,900

A little above Mountain Run, at a favourable site, a dam must be located to raise the water up to Brannen's ford, near to which a few rocks have to be removed.

Amount carried forward, $13,98

Amount brought forward,	13,980
For the dam and lock,	1,600

Thence to the head of Snake Castle Falls the distance is 5½ miles, and the fall nearly 8 feet, part of which will be improved by raising a dam at the head of Barnett's race; the balance might be overcome by a low dam at Allen's old site, allowing for a fall in the pond. But as the river is confined within a narrow bed above this, the depth of water is generally sufficient, except at a few places where sluices and wings may answer a good purpose, and retain a sufficient depth so long as the supply of water will exceed the wants of the mills.

For improving the bed of the river down to Snake Castle falls,	300
For improving and extending Barnett's race, &c.	840
Two locks of about 16 feet lift together,	1,500

Just at the end of this canal is the head of Skinker's pond. The race of this mill is 700 yards long, and sufficient for one boat only; it may be improved for two boats by forming occasional passing places.

For improving Skinker's race, guard gates, &c.	900
For two locks of 12.30 feet lift together,	1,400

Thence to the mouth of Deep run, a distance of 1½ miles, the river being narrow, the navigation may easily be made good.

For removing rocks, &c.	120

From Deep run to Strother's old dam and race, the fall is 13.71 feet, which may be overcome by two successive dams, and then a canal 700 yards long must be made, part of which is already excavated.

For two dams and locks of 13 feet lift together,	4,200
For a canal and two locks of 10 feet lift,	1,700

The lower point of this canal will be at the head of a pond to be formed by a dam which Major Richards intends raising. From the level of this pond down to Richards' ferry the fall is 13.69 feet. Part of the new race had been excavated.

To improve the race for navigation,	400

Below Major Richards' the Rapidan unites itself with the Rappahannock; the fall in this distance is 3.83 feet. The river being very wide at and below

Amount carried forward,	$26,940

Amount brought forward,	26,940

the mouth of the Rapidan, it will be best to overcome this fall by prolonging the canal down to the confluent, for which the ground is good.

For extending the canal down to the Rapidan,	1,100

At the mouth of the Rapidan a very considerable fall begins, which extends down to Barrow's ford. Among the various plans which suggest themselves to pass these falls, the following, under present circumstances, appears most expedient: To cross the Rapidan in its bed, made deep enough by a slight dam thrown across a little above its mouth, and then, by cutting through a narrow island, to enter the race of a small saw-mill, and continue the same to below Barrow's ford, along ground, one half of which is rocky, and at one place will throw the canal into the river.

For a small dam and cut through the island,	180
For improving the race,	300
For canal, gates, &c.	2,840
For 45.69 feet of lockage from Major Richards' pond to Barrow's ford,	5,725

From the end of the canal below the ford to the head of Banks' pond, the distance is about 5 miles, in which the fall was found by Mr. Baldwin to be 19 feet. The river in this section is generally so narrow that, although rapid in places, it affords a good navigable depth, except at a few points where the removal of some rocks will make it sufficiently deep for the contemplated navigation, as allowed by the mills.

For improving between Barrow's ford and Banks' pond,	400

Dams affording water power would be more perfect, but do not appear indispensable.

Banks' race is wide and deep enough, except at two turns.

For improving this race,	300

It would be well to raise Banks' dam one foot, the expense of which would be fully compensated by some saving in sluicing above and excavating the short canal below.

Amount carried forward,	$37,785

Amount brought forward,	37,785
Extension of the race, deep cutting, &c. down to Banks' ferry,	1,495
For two locks of 11.57 feet lift together,	1,250

Just below Banks' ford and ferry there is a long smooth sheet of water, after which the Great Falls begin. But still, the water being much confined by rocks, is generally deep though rapid, and sluices may suffice for the present, down to a small island a little above the Forge mill-pond. The fall from Banks' ford to this point is 9.50 feet.

For the improvement in the distance,	200
Total estimate so far,	$40,730

To this place, where the water begins to be wide and shallow, a pond must be raised, by a dam located below, at an excellent site. Out of this pond, the Fredericksburg canal should be taken; its adoption was concluded upon, after a careful examination of all the circumstances connected with the scheme, on both sides of the river.

On the north side, lies Falmouth, just at the foot of the Falls; on the south side, is situated Fredericksburg, at the head of navigable tide water; the river from the former to the latter place being shallow; within the recollection of some inhabitants, it was deep enough for small vessels, but has filled with sand.

On the side of Falmouth, there is but one mode of improvement, which consists in raising a dam at the head of the Forge mill pond, and descending by a lock into this, to enter the race, at the end of which the level must be dropped into the pond of the Falmouth race: this may then be pursued down to Falmouth. There, as no basin can be formed, the canal must be extended parallel to the river, to a point just above the bluffs; where, if deemed necessary, locks might be placed. to communicate with the river, which is deep enough there.

This plan would cost as follows:

For a dam and lock,	$2,330
For guard-gates, trimming of the race, and 3 locks between the Forge and Falmouth races, and some excavation,	2,400
For guard-gates at the head of the Falmouth race, enlarging of the same, &c. and trough to cross the Falmouth run,	720
Amount carried forward.	$5,45

Amount brought forward,	5,450
For a canal through Falmouth and along the river, with Bridge,	1,850
For five locks, to communicate with tide water,	3,700
Total estimate on the side of Falmouth,	$11.000

The communication with tide water by locks, is, I *think*, indispensable on this side, since small vessels cannot reach as high as Falmouth, and could not be approached easily by land: this appears to be the cause which has fixed the trade at Fredericksburg.

On the side of Fredericksburg, two plans suggest themselves; the one, to take the canal out of the pond made, as already stated, a little above the Forge pond, and to carry it along the rocky bank of the river, and around Thornton's point, as far as the head of Thornton's field: and *thence*, passing across a narrow neck of land, to continue the *same level* along the east side of the valley behind Fredericksburg, so as to bring the water to a basin convenient to the town.

The other plan consists in pursuing the river down to tide water by still ponds and short canals: this plan availing itself of some mill races already opened. This route does not appear as eligible as the first, for the following reasons:

1st. Whether dams be raised or a canal cut, it will occasion the main expense of the former plan between the Forge race and Thornton's point.

2d. It requires a lockage of nearly 50 feet, besides other necessary works, and therefore would, in the aggregate, cost more.

3d. Although Fredericksburg is entitled to a proportion of the water which passes down the river, since the Forge dam cannot extend across beyond a certain point; still, drawing off the water through locks, might occasion some contention as regards the water right.

4th. The trade of the Rappahannock will probably never be of such a nature or activity, as to meet, with any regularity, the shipping which reaches Fredericksburg; so, that the produce must necessarily be deposited into warehouses; and consequently, if it went down to tide water, most of it would have to be brought up again into the town; the river answering in that case, no other purpose than that of an inconvenient and unsafe basin, as regards internal commerce. There appears to be, therefore, no expediency in taking the boats down to tide water: whereas, if a basin and canal be made above the town, they will afford, at a less cost, an easier and safer transit and interchange of the trade; the place selected being highly favorable to the building of warehouses.

A basin in that situation will procure to Fredericksburg a most important advantage, for which the town of Lynchburg is about to expend $40,000; that of a valuable supply of water; whereas now it is very ill provided. This benefit alone would justify the expenditure of the canal and basin.

Lastly, these once filled, will, in droughts, not lose any more water than what results from evaporation and filtration; an inconsiderable quantity, far less, certainly, than that to which this side of the river is entitled. This plan will, therefore, not interfere with the water rights in Falmouth, whereas the other would evidently have that effect.

The level assumed for the canal is about 4½ feet above that of the Forge race: if the latter level was used, both sides would be connected with the same pond, and in some measure dependent on each other, which should be avoided. Besides this, the higher level saves lockage, a higher dam, and much deep cutting.

The best site for the basin, is a hollow at the top of the hill, behind and close to the town, near Mr. Gordon's property: if desired, it could be much enlarged by embracing some hollows, wherefrom brick clay has been extracted. A very inconsiderable embankment and waste will close the hollow and complete the basin.

The situation of the basin at the top of the hill, is very lucky, not being liable there to be filled by any wash from adjoining declivities, and being, besides, more healthy. For, as the level of water will be constant, no more danger is to be apprehended from this, than from the Richmond basin, the vicinity of which is known to be healthy.

The following is an estimate of the canal and basin; the entrance of the canal being through a natural channel of the river, close to the right shore:

For pier-head, guard-gates, blasting, embankment, paving,	$ 1,850
For excavation, mostly through rocky ground, puddling and paving,	2,170
For excavation through Thornton's field, and on to the basin,	2,840
Amount carried forward,	$ 6,860

Amount brought forward,	$6,860
[illegible] trimming the basin, and closing it by an embankment and waste,	290
Total estimate of the canal and basin,	7,150
Amount brought forward for the improvement down to the entrance of the canal,	40,730
Total amount,	47,880
For superintendence, contingencies, &c. 10 per cent.	4,790
Probable cost of the whole improvement,	$52,670

The expense might somewhat be reduced, by diminishing the width of some of the canals, and only allowing passing places: but, except where particularly stated, I would not advise this plan, which would not, by any means, produce an economy commensurate to its disadvantages. Wherever not otherwise expressed, the canals are all assumed to be twenty feet wide.

REPORT

ON THE

CONNECTION OF NEW RIVER AND ROANOKE.

The examination of the dividing summit between these two streams, was made in the summer of 1827, and reported upon, (12th annual report, page 327.) The great facility of bringing an abundant supply of water to the very top of the Alleghany having thereby been demonstrated, the descent towards both New River and Roanoke, was made the object of last sum-
tion.

this last operation established still more fur-
r advantages of this route over any of those
ed for connecting the Eastern and Western

In order to diminish the lockage and the length of feeder, a cut is proposed to be made through the top of the mountain by which the surface of the canal will be sunk 30 feet lower.

The summit level, as stated in the report of last year, will be abundantly supplied with water from Little River, by a feeder about 9¼ miles long. passing through the Pilot Mountain in a tunnel one mile and 200 yards long, which not being made of the enlarged dimensions adapted to navigation, is not liable to the objections incident to navigable tunnels. This feeder, after passing through the Pilot Mountain, will keep along the western face of the Alleghany as far as a depression whereat it will cross it; and there taking a sudden fall of 25 feet, it will pursue the windings of the eastern face of the Ridge to the Basin at the summit level. Thus, the waste water may all be thrown on the side of Roanoke.

As to the quantity of water, it was estimated in 1827, that Little River, at the origin of the feeder, afforded very nearly one hundred cubic feet per second at a minimum, the water being then said to be very low. But last year, (1828,) the extraordinary drought which prevailed throughout the country, reduced several streams gauged in 1827, to about one-half of what they were the year before. This circumstance, though of extremely rare recurrence, shews that Little River may occasionally be reduced as low as 50 feet per second. Another consideration recommends the adoption of this safest minimum: As the country becomes more cleared, it is well known, that, by obvious causes, the water courses diminish in size during the dry season: and, although this cause cannot operate on Little River as much as elsewhere, most of the country inclining towards it being hardly susceptible of cultivation, still in devising a scheme of so much magnitude and importance, it will be best to rate the supply at only 50 feet per second at Little River, of which probably only about 40 feet would reach the summit level in droughts.

There the lockage must be supplied on both sides: Supposing that one boat should pass every 10 minutes through a lock holding 10,000 cubic feet of water; if it was possible so to regulate the passage of boats, that ascending and descending, one should alternate, the former preceding, then only one-half of a lockful would be consumed by each boat at each end of the summit level in every ten minutes: but, as this alternation of boats could not well be established, it will be safer to predicate the expense of water upon an average of the cases that may occur.

A boat will draw out of the basin,

if it find the lock,	empty,	in ascending,	1 lockful,
		in descending,	1 lockful,
	full,	in ascending,	1 lockful,
		in descending,	none.

Average at each end of the summit level, ¾ of a lockful, or for each boat passing the summit level, 1½ lockful, equal to 15.000 cubic feet in 10 minutes, which is only per second, *25 feet,* which leaves a surplus of *15 feet,* to dispose of in the greatest droughts, exclusive of what may be collected in reservoirs, for which numerous sites exist in the course of the feeder.

The number of feet assumed here as making a lockful, is for pretty large locks; smaller ones would draw less water, but might be passed quicker, which produces nearly a compensation as regards the quantity of water consumed *in a given* time, and cannot, therefore, affect materially *the above* approximate calculation.

I should, however, prefer and recommend small boats; that is, such as will carry from 20 to 25 tons, it being the full load of one horse. It appears, that on the Ohio and Chesapeake Canal, the boats and locks are intended to be much larger; but, except as regards travelling, I do not think that either economy, or convenience and expedition will attend this plan: And, as across a summit level, where the locks are closely repeated, travelling by the canal would be out of question, I am convinced that small locks would accommodate the trade a great deal better. I have, therefore, estimated them of 10 feet width and 75 feet length in the clear.

The summit level being evidently amply supplied with water, the most important object in the scheme is thus determined. I will now proceed to give a brief description of the route of connection.

The deep cut or summit level extends from the top of the ridge 510 yards eastwardly, and 573 westwardly, in all 1,083 yards. The greatest depth of cutting, as already stated, places the water line 30 feet below the top of the ridge.

From the western end of the summit level, the canal must necessarily descend down the valley of Meadow creek.

In the 1st half mile,	37 feet,
In the next,	43 feet,
In the 2d mile,	40 feet.

After which, the descent becomes very gradual.

At a distance of only 300 yards from the end of the deep cut, and only 47 feet below the top of the ridge at this depression, the head spring of Meadow creek is found. The creek increases very rapidly in size in its progress.

As far as the mouth of Meadow creek, the canal will, as usual, occupy various kinds of ground; most of it, however, favorable for excavation. A detailed description of the route will be found in the estimate: the canal will generally keep the right or north side of the valley.

From the end of the deep cut to the mouth of the creek, the distance is 7 miles 920 yards, and the descent 270 feet.

Along Little river, very bad cliffs alternate from one side to the other; and although a canal would be practicable, this section, which is 3 miles 766 yards long, and fall 38.76 feet, might, with more facility, be improved by dams and locks, for which very eligible sites present themselves all along. The first dam should be made to flow up Meadow creek, a distance of about a quarter of a mile, to the head of a bad cliff, whereat the canal should stop: thereby, the difficulty of passing this bluff would be obviated.

New river, at the mouth of Little river, is at least as large as James river, at Cartersville.

Returning to the top of the Alleghany, the deep cut, as above stated, extends eastwardly 510 yards; after which, one of the head valleys of Elliott's creek is descended: on this side, the declivity is rather more rapid than on the other. The descent is,

In the 1st half mile,	65 feet,
In the next,	48 feet,
In the 2nd mile,	40 feet;
Thence to the junction of this, the north, with the south fork of Elliott's creek, the distance is 1¾ mile, and descent	86 feet,
Which is, per mile, about	49 feet.
From this point to the mouth of Elliott's creek, the distance is 8 miles 1540 yards, and fall	417 feet,
Which is, per mile. nearly	47 feet.

After which, the fall of the stream, which then assumes the name of Roanoke, becomes very gradual.

The head spring of the north fork of Elliott's creek, is found at 105 feet below the top of the ridge, and about ½ mile from the end of the deep cut. The size of the stream increases very fast, and at its junction with the south fork, a new feeder might be introduced if desired, but would not be wanted unless for water-power.

From this short expose, it will be perceived that, on either side, it is only in the first mile that the descent will be such as to place the locks too close to each other to allow of suitable basins between them; a disadvantage which, in ordinary cases, is but in part obviated by connecting several locks together; for, although the intermediate basin between two chains of locks is enlarged, it is still liable, on the other hand, to receive occasionally as many lockfuls at once as there is locks connected above it, or to have abstracted from it as many lockfuls as there are connected locks below; which will happen whenever boats alternate in direction, and will then produce irregular swells and depressions of the intermediate basin, injurious to its banks.

In the present case, however, the difficulty may be altogether obviated, the two draughts being adequately wide for making up in width the deficiency in length of the intervening basins: so that by this means, the locks may all be detached.

A tunnel about 2 miles long, and 110 feet below the assumed summit level or base line, that is, 140 feet below the top of the ridge, would likewise obviate this close succession of locks on both sides, save 220 feet of lockage, and cost very little more. But though advantageous in these respects, a tunnel would be liable to some inconveniences and objections, which render the expediency of opening one questionable.

Towards Roanoke the ground alternates from good to bad, but is most generally of the former character: the left or North side of the valley affords the best location down to the mouth of Elliott's creek, and thence along the South fork of Roanoke, as far as the cliff just above the point where the stage road crosses it for the first time. There, the canal should pass over to the right side, and continue down it as far as the next cliffs, where the road crosses it again.

At this point the canal must pass to the left, and pursue it to the junction of the two forks, preserving a suitable level to cross the North fork upon an aqueduct.

After having passed over the North fork, the canal, retaining the same high level, both with a view to a connection with James River, and in order to shorten a tunnel across a bend below, must follow the windings of the hills in sight of Roanoke, as far as the place where it is crossed for the last time by the stage road.

There, by a tunnel of 850 yards in length, a distance of about three miles may be saved, and some bad cliffs avoided. At the eastern outlet of the tunnel, after a deep cut 240 yards long, the canals down Roanoke and towards James River, should separate, the former descending by a succession of locks to the level of the low grounds near E. White's, and thence running along their upper edge through generally good ground, as far as Salem, where the operations of last year ceased.

So far, owing to the great fall in the river, a canal is the only eligible plan to improve the Roanoke. More minute particulars will be found in the estimates.

In order to render a reference to the principal dimensions more convenient, I have thrown them here into a tabular form.

DISTANCES AND ELEVATIONS

Referred to the top of the Alleghany, at the depression between the heads of Meadow Creek and the North fork of Elliott's Creek.

	Miles.	*Chains.*	*Feet.*
WESTWARDLY.			
From the top of the Alleghany,			
To the end of the Deep cut,	0	26.06	30.00
To the end of the next mile,	1	26.06	80 00
To the mouth of Meadow creek,	7	68	300.05
To New River, at the mouth of Little River,	11	23	338.81
EASTWARDLY.			
To the end of the Deep cut,	0	23 15	30.00
To the end of the next mile,	1	23.15	113.00
To the junction of the two forks of Elliott's creek,	4		268.44
To the mouth of Elliott's creek,	13		684.00
To the South fork of Roanoke, at the head of the cliff just above the first crossing of the stage road,	18	16	774.31
To the end of the cliff above the second crossing,	21	74	845.70
To the North fork at the site of the aqueduct, which will be 100 feet long,	24	11	896.16
Level in the aqueduct and James River feeder,			857.70
To the forks of Roanoke,	24	27	900.58
To the entrance of the short tunnel,	28	62	
To Roanoke, nearly opposite the mouth of the tunnel, and at the last crossing of the road,			939.27
To the river opposite E. White's,			1009.73
To the pond at Salem, (by the route of the canal,)	36	12	1076.59

The following elevations of different points above tide-water, computed either from my own surveys, or other documents, may likewise be of some interest in the enquiries relative to the connection of the eastern and western waters.

ELEVATION ABOVE TIDE-WATER.

Of James River,	at Maiden's Adventure,	141
	at Columbia,	178
	at Scottsville,	255
	at Lynchburg,	500
	at the North Branch (head of the canal,)	700
	at Pattonsburg,	806
	at Covington,	1,222
Of Greenbriar,	near the Droop Mountain, 39 miles above Howard's Creek,	1,986
	at the mouth of Anthony's Creek,	1,779
	at the mouth of Howard's Creek,	1,669
	at the mouth of Second Creek,	1,629
	at its mouth or	1,382
Of New River,		
	at the mouth of Sinking Creek,	1,627
	at the mouth of Little River,	1,740
	at Bowyer's Ferry,	982
	below the Great Falls of Kanawha,	641
	of the mouth of Kanawha in the Ohio,	535
Of the Ohio,	at Pittsburg,	648
	at the mouth of Big Beaver,	691
Of Lake Erie,		563
Of the Champion Swamp, dividing summit between Lake Erie and Big Beaver,		905
Of Roanoke,	at the mouth of Elliott's Creek,	1,399
	at the Forks,	1,178
	at Salem,	1,002
Of the Alleghany,	at the head of Second Creek,	2,596
	between the south prong of Fork Run and Tuckahoe, (the best route in this quarter,)	2,315
	at the north prong of Fork Run,	2,445
	at the Turnpike,	2,512
	at the Old Road,	2,476
	between Brush Creek and the north fork of Howard's Creek,	2,758
	between the middle fork of Ogley's Creek and Anthony's Creek,	2,996

Of the Alleghany, in Montgomery county, Virginia, between Meadow Creek and the north fork of Elliott's Creek,	2,079
in the same county, between Stroubler's and north fork of Roanoke,	2,072
On the route of the Ohio and Chesapeake Canal by Deep Creek,	2,567
by Casselman's route,	2,759

This comparative table shews, that the depression of the Alleghany in Montgomery county, is considerably the lowest of any yet recommended for a connection of the eastern and western waters.

In my report of last year, I had established a tabular comparison between this and the Ohio and Chesapeake Canal routes. The operations of last season having elicited some results somewhat different from those then presented, many of which had been obtained by mere competition, I do herewith submit similar corrected tables; discarding, however, the Deep Run route of the Ohio and Chesapeake Canal, which is no longer thought of.

COMPARATIVE VIEW,

Of several Routes, for a Canal-connection of the Eastern and Western Waters.

OHIO AND CHESAPEAKE CANAL.

CASSELMAN'S ROUTE.

	Distances in miles.	*Lockage in feet.*				*Length of Tunnel.*	*Deep cut 35 feet next to the tunnel.*	*Elevation of the ridge above the assumed base line.*	*Length of feeder, in miles.*	*Minimum supply of water at the origin of the feeder, in cubic feet per second.*
		ascent.	*descent.*	*average per mile.*	*total*		*in yards.*	*in feet.*		
From tide water to Cumberland,	185 5-8	578	-	3.11						
Thence to the mouth of Little Wills' creek,	13 7-8	309	-	20.43						
Thence to the eastern end of the summit level,	15 1-4	1016	-	66.62						
Summit level,	5 3-4	0	0	0			*Eastern.* 140 *Western.* 1060			
From the western end of the summit level to the mouth of Middle Fork creek,	16 1-8	-	216	13.40						
Thence to the mouth of Casselman's river,	19 5-8	-	490	24.75						
Thence along the Youhogany to Connesville, one of the worst sections of the line, the river breaking thro' the Briary and Laurel mountains: (In one mile of this section, the fall is as much as 96 feet, and the ground bad,)	27 1-2	-	432	15.70		navigable.				
Thence to the mouth of the Youhogany,	43 3-4	-	152	4.50						
Thence to Pittsburg,	14	-	35	2.50						
						mls. yds.	1200	856	[illegible]	18

ROANOKE AND NEW RIVER CANAL.

	Distances in miles	*Lockage in feet.*				*Length of Tunnel.*		*Deep cut 30 feet at the deepest.*	*Elevation of the ridge above the assumed base line.*	*Length of feeder, in miles.*	*Minimum supply of water at the origin of the feeder, in cubic feet per second.*
		ascent.	*descent.*	*average per mile.*	*total.*	*naviga-ble.*	*for feeder.*	*in yards.*	*in feet.*		
From tide water to Salem, (computed,)	224	1002	-	4.47						Taken from Little river.	
Thence to the forks of Roanoke,	11 3-4	176	-	14.98							
Thence to the mouth of Elliott's creek,	11 1-4	221	-	19.64							
Thence to the end of the summit level,	12 5-4	650	-	51.53			*mil. yds.*	*Eastern.*			
Summit level,	5-8	0	0	0		none.	1—200	510 *Western.* 573			
From the western end of the summit level down Meadow creek and Little river, to New river,	11 1-4	-	309	27.46							
Thence to the mouth of Greenbriar,	83 5-8	-	358	4.26							
Thence to Bowyer's ferry,	45 1-2	-	400	8.79							
Thence to the foot of the Great Falls of Kanawha,	22	-	341	15.50			*mil. yds.*				
Total amounts,	422 3-4	2049	1408	-	3457	none.	1—200	1083	30	9½	50

By a tunnel two miles long, as stated in the body of the report, the rapid descent at the beginning, and 220 feet of lockage, might be saved, which would reduce it to but little more than that of the Ohio and Chesapeake Canal: a farther lowering of the level might give the same lockage, and a tunnel of about the same length, but only 170 feet below the top and succeeded by an easy declivity, and favorable ground on both sides.

JAMES RIVER AND KANAWHA CANAL.

1st.—*BY WAY OF COVINGTON AND GREENBRIAR RIVER.*

	Distances in miles.	*Lockage in feet.*				*Length of Tunnel.*		*Deep cut 50 feet next to the tunnel.*	*Elevation of the ridge above the assumed base line.*	*Length of feeder, in miles.*	*Minimum supply of water at the origin of the feeder, in cubic feet per second.*
		ascent.	*descent.*	*average per mile*	*tota .*	*naviga-ble.*	*for feeder.*		*in feet.*		
From tide water to Pattonsburg,	199	806	-	4							
Thence to Covington, (by the improvement,)	58 1-2	416	-	7.11							
Thence to the mouth of Fork run,	16 1-2	432	-	26.18							
Thence to the end of the summit level,	2 5-8	264	-	100.50							
Summit level,	4 1-2	0	0	0				*Eastern.* 458 *yds.* *Western. mil. yds.* 1—177		31 1-8 *fm. Greenbriar.*	43 *from Greenbriar.*
From the western end of the summit level, down Howard's creek, to Greenbriar,	8 1-8	-	249	30.65							
Thence down Greenbriar to New river,	49 1-8	-	287	5.90							
Thence to Bowyer's ferry,	45 1-2	-	400	8.80						1 7 8 *from Anthony's creek.*	11 *from Anthony's creek.*
Thence to the foot of the falls of Kanawha,	22	-	341	15.50		*ms. yds*	*ms. yds.*	*mil. yds.*			
Total amounts,	405 7-8	1918	1277	-	8195	2—1120	5—958	1—635	897	33 *miles.*	54

If a tunnel of the same length, with the same depth of cutting at each end, were made here, the lockage would be reduced to 3,155 feet, which is about the same as on the Ohio and Chesapeake Canal.

2d.—BY WAY OF PATTONSBURG, ROANOKE AND NEW RIVER.

From tide water to the mouth of the Catawba,	212 3-4	886	-	4.16		Tunnel from Mason's to Carvin's creek, 2 miles. Another through Tinker's m'tain, 3 3-4		Not ascertained for the 8 navigable tunnels.	Ditto.		
Thence to the forks of Roanoke, (computed,)	51	292	-	5.72							
Thence as before to summit level,	24	871	-	36.29							
Summit level,	5-8	0	0	0							
Thence as before to the mouth of Greenbriar,	94 7-8	-	667	7							
Thence to the foot of the falls of Kanawha,	67 1-2	-	741	11			*mil. yds* 1—200				
Total amounts,	450 3-4	2049	1408	-	3457	5 3-4	1—200			9½	50

These tables shew, that the James River and Greenbriar connection is all considered fully as practicable as the Casselman's route, or Ohio and Chesapeake Canal; but that the route between New River and Roanoke, is by far superior to both.

Here we have a most abundant supply of water at such an elevation, that we are compelled to let it fall a great number of feet, in order to admit it into the summit level; rendering it thereby useful for mechanical purposes, even before it reaches the canal, and leaving, moreover there, a surplus applicable to the same object.

Whereas, on the other routes, a rather scanty, if not a doubtful supply is obtained at the expense of vast reservoirs, long tunnels, &c. On the Ohio and Chesapeake Canal especially, the supply is secured by passing the tunnel through the Alleghany, at the enormous depth of 856 feet, requiring, therefore, shafts to be sunk close to each other to this extraordinary depth at least, (for, it is not improbable that many points of the ridge would be much higher above the tunnel than the lowest point under which, according to the map, its direction does not pass,) and after all, only 18 feet of water are obtained at the origin of the feeder. On the Kanawha route, the quantity of water is much more abundant, (54 feet,) but it has to travel such a distance over difficult and broken ground, that unless the feeder was constructed and regulated with unusual care, it is doubtful whether the supply would not be exhausted in droughts before reaching the canal, which would have then to depend altogether upon reservoirs.

No such difficulty is encountered on the Roanoke and New River route; no navigable tunnel is required. If one should be made, it would be only as a matter of expediency or economy; but not, as on the other routes, from indispensable necessity: and then its depth below the ridge would not necessitate shafts of an objectionable length: 150 feet would be the extent of the deepest.

Reservoirs likewise, are perfectly unnecessary, and would be made only, if at all, for the purpose of collecting more water power.

Here again it is only for one mile on each side, that the declivity is too great to allow a sufficient distance between the locks: but it has been seen that the valley is quite favorable to the formation of intermediate basins, which, by occupying the middle of it. would make up in width their deficiency in length, or else that a tunnel at a moderate depth under the ridge, would at once obviate this rapid descent, and save lockage.

On the other routes, on the contrary, we find a rapid descent for several miles, in situations where basins cannot be formed, and the resource afforded by tunnelling is already exhausted. The following description is given in the report of the Ohio and Chesapeake Canal, of the section of 15¼ miles, which descends 1016 feet.

"The considerable descent in so short a distance, the contracted breadth of the valley, the steepness of its sides, the great quantity of excavation in rocky ground, will concur together to render this sub-division very expensive in proportion to its extent," &c.

On the same route, another descent of 96 feet in a mile, too great for intermediate basins, occurs near the Ohio pile falls, where the ground is also very bad.

Nothing of the kind occurs at the head of the vallies of Elliott's and Meadow Creek, and the facilities for the only two rapid miles of the connection are such, that the expense will but little exceed that of mere lockage.

Let all these circumstances be contrasted, and the great superiority of the New River and Roanoke connection over the Casselman's route, will be so conspicuous, that it is unnecessary for me to recite its other obvious advantages, as regards climate, geographical position, natural productions, &c., of which I had occasion to speak in preceding reports. I will only add here, that besides the mineral productions, and building materials formerly noticed, I was credibly informed last year, that plaster of paris and marble had since been discovered in abundance some distance above the forks of Roanoke. I saw a sample of the marble, but not of the plaster; some was to have been procured for me, but I failed in getting it.

Another very important feature of this route, is the possibility of combining also with it, a connection with James River, though under circumstances of considerable difficulty, and thus uniting by the same scheme, the James, New River, and Roanoke.

Concerning the connection of the James and New Rivers by this route, it is proper to observe that, although the table might make it appear 45 miles longer by the Roanoke route, it is so only as regards the communication with the Ohio River: but, in fact, it is much the shortest line to reach New River, and to favor the trade of the upper part of this valley, as well as the Holston, which is by far the most certain of the two. For, from the mouth of Little River to Pattonsburg by Roanoke, the distance would be about 100 miles, and the lockage 1552;

where ... by way of Greenbriar, both the distance and lockage would be much more considerable, as is exhibited on the tables. The certainty of obtaining the trade of the upper part of New River, the Holston and East Tennessee, is established by the circumstance that they have no other outlet; and wagons are daily seen travelling bad *roads* towards Baltimore, crossing Virginia and her fine water *courses*, to seek a market and an inferior sea-port. Sometimes the wag... stops at Lynchburg: but would it exist at all, if a water communication was established? Would then this unnatural commerce continue, and the unsurpassed harbour of James River be neglected?

New River, *as high up as Little River*, and, from what I understand, *a great deal farther, is a noble stream*, as large and fully *as susceptible of improvement as James River itself*, and its [illegible] now *almost null, would be rendered active and* very valuable by a connection across the Alleghany. *The section* below Bowyer's Ferry constitutes the only formid*able diffi*culty in the progress to the Ohio; but, on the other hand, it prevents effectually the competition of New Orleans, and leaves the trade of the whole country above it entirely to Virginia. The possibility of connecting New river and the Holston is likewise spoken of with confidence; but, on this subject, I am possessed of no personal information.

In regard to a connection of New river and Roanoke by a rail-way, it does not present any difficulty: But the route for it, instead of passing south of Christiansburg *like the* canal should cross the Alleghany at the *depression already* noticed between the heads of *Stroubler's creek* and *the North fork* of Roanoke. The greatest inclination of the road would not exceed 1½ degree. Whether this mode of improvement *on so* long a line would answer as good a purpose as a canal under the peculiar circumstances which characterise the trade of this country, is as yet a matter of mere opinion and speculation; the great experiment in progress in Maryland, will soon, it is presumed, furnish the solution of this important problem. As the survey could not be carried last season lower than Salem, it appeared to me that it would be expedient *to defer* the estimates until the whole could be presented in a body. I hope that this conclusion will meet the approbation of *your* honorable Board.

REPORT

ON THE

CONNECTION OF ROANOKE AND JAMES RIVER.

From the general appearance of the country lying between Roanoke and James river, it had been presumed that a connection of these two streams by a canal would not involve any difficulty. I regret to report, that these hopes have been in a great measure disappointed. The following is an account of the operations, and of their result.

Supposing that the low dividing ridge between Looney's creek and Tinker's creek, was sufficiently depressed some where in the neighbourhood of Amsterdam to conduct a supply of water over it, an experimental survey was carried along it, by which its principal depressions were ascertained. The lowest is situated about two miles east of Amsterdam,, and the next in the road at Howrie town, one mile north-east of the former village.

The next step was to determine what supply of water could be obtained. The level demonstrated that the Catawba, the only considerable tributary of James river near the supposed point of connection, afforded too little water at the requisite elevation to render any essential service on this route, even if the level was sunk in a tunnel through the ridge. The length of the feeder would exhaust the supply, before it could reach the dividing summit. Hence, nothing could be obtained from the James river tributaries.

Turning, therefore, our view towards the Roanoke, we carried an exploring survey down Tinker's creek to Johnston's Springs, and through Salem to this river, which was found to be sunk lower below the dividing ridge than had been supposed. We had then to ascend it for a considerable distance.

At the forks of Roanoke, the level was still 223.50 feet below the top of the ridge. Here, the North and South forks unite; and consequently, as it was obvious that the body of water afforded by both would be necessary to supply the dividing ridge at Amsterdam, and that for this purpose a feeder must be brought down to this point along each fork, at that elevation of 223 feet above the streams at their junction, it was apparent that so high a level would be objectionable, if not altogether impracticable; the high cliffs along the two forks making it next to impossible to support a canal at that height.

To this difficulty was added the consideration, that a higher level would add to the length of a feeder, which it was already evident would be considerable, even from the forks; the distance to the summit level by land being as much as 25 miles. It did not appear expedient, therefore, to go farther for the supply.

A level 43 feet above the forks, which a dam a short distance up the North fork could reach, and at which the canal down the South fork could be made to cross the former upon an aqueduct, was then assumed as the greatest height which could be given to the feeder. This, necessarily reduced elevation, produced already an unfortunate alteration in the plan; a level 180 feet below the ridge necessitating evidently a tunnel which would not have, as in other cases, the compensating advantage of saving lockage, since here the canal from the top of the Alleghany would be constantly descending towards James River.

The feeder at the assumed elevation was next traced along the hills, and here again local circumstances proved unfavorable, the hills being so broken and steep as to cause the canal to wind 16 miles in a distance of only 7, although several deep cuts and high embankments across ravines were introduced: So that, in this same ratio, which the nature of the country justifies, the feeder would be at least 60 miles in length through a most rugged country. I deemed it, therefore, unnecessary to pursue the feeder farther, and concluded the operations relative to a connection across by Amsterdam, with ascertaining the length of tunnel that would be required, and found that it would measure 3¾ miles.

Considering this part of the scheme as hopeless, I next directed my enquiries towards the Catawba, and having pushed offsets up the vallies of Mason's and Carvin's creeks, I found, upon platting the surveys, that a tunnel from the head of Carvin's creek to the Catawba, through Tinker's mountain, would likewise be 3¾ miles.

Though this tunnel would be of the same length as that on the other route, still here two great advantages are at once discovered: In the first place, the feeder to reach the tunnel would be at least 12 miles shorter.

And in the next, the communication being opened through it directly with the Catawba itself, at least 8 feet more of water per second, which flow in this stream, would be furnished without loss, exactly at the summit level, exclusive of what might be collected in reservoirs.

But, even with these advantages, the feeder towards the Catawba would be about 48 miles long, unless shortened by another tunnel of two miles in length between the vallies of Mason's and Carvin's creeks, by which probably 15 miles, and some expense, would be saved.

The following is a statement of the principal results of the survey; the elevations are referred to the James River at Pattonsburg:

Level of James river at the Pattonsburg bridge,		0.00 feet.
	Mouth of the Catawba,	80.40
	Head spring of Looney's creek,	520.00
Depression of the Dividing ridge,	at its western extremity, between Tinker's creek and the Catawba,	645.00
	at Howrie town,	605.16
	at its eastern end, between Looney's creek and Little Buffaloe,	595.75
Height of the Botetourt Spring,		230 00
Mill pond at Salem,		196.19
Forks of Roanoke,		372.20
North fork at the site of the aqueduct,		380.21
Assumed level of the feeder,		415.08
Probable length of feeder, to follow the hills,	to the Ridge, by Amsterdam,	60 miles.
	to the Catawba,	48
Length of the latter shortened by a tunnel two miles long, from Mason's to Carvin's creek,		33
Supply of water to be obtained from both forks of Roanoke united, in the driest seasons, exclusive of reservoirs,		34 feet per second.
Ditto from the Catawba,		8

(Each fork furnishes about one half of the quantity, or 17 feet.)

It must not be forgotten, that last year a most unusual drought had visited the whole country, and that the water courses never were known to be so low. The preceding year which was considered to be pretty dry, Roanoke measured about 70 feet per second.

To resume, it will appear from the above statements, that the connection of James River and Roanoke, by a canal, is practicable; but, instead of an easy undertaking, as was expected, it would prove one of the first magnitude.

A feeder should be taken out of each fork of Roanoke, on a level 43 feet above that of their junction: the feeder coming down the South fork, would present no extraordinary difficulty at this elevation; in fact, it would be a link of the canal connection between New River and Roanoke, which, having to cross the North fork by an aqueduct, should be supported at the stated height; that is, 35 feet above the stream itself at the crossing place.

As to the section of the feeder down the North fork, it could not well come down the left bank at the above mentioned elevation, on account of some bad cliffs on this side: it should, therefore, be brought along the right bank, and made to unite with the other before reaching the aqueduct over which both supplies would thus pass together. Afer having reached the left or north bank, the canal must continue on the same side, in sight of the river, as far as the point where the present road leaves it altogether, a distance of about 4 miles: there, by a tunnel 850 yards in length, almost under the road itself, a distance of about three miles will be saved, and a considerable length of cliffs avoided. This short tunnel I consider expedient, even as part of the canal down Roanoke; and, consequently, in what precedes it, has not been mentioned as essentially incident to the James River connection.

At the outlet of the tunnel and eastern deep cutting, the canals down Roanoke, and towards James River, which so far should be united, will necessarily diverge; the latter, before reaching Mason's Creek, will go through its principal windings, almost in sight of Salem. Then, from the head of the east prong of the creek, a tunnel two miles long will conduct it into the valley of Carvin's Creek, within which it will run for three miles, and then reach the long tunnel of 3¾ miles under Tinker's mountain; at the end of which, the valley of the Catawba will be entered, and pursued down to James River. The lockage in the distance being 320 feet, (a suitable deduction being made from the difference of elevation of the mouth of Catawba and of the beginning of the feeder, for fall in this and for the raising of James River by some improvement.)

In regard to the supply of water, the minimum of 8 feet obtained from the Catawba, being introduced exactly at the summit level, would suffer no reduction.

From Roanoke, it must be recollected, that 34 feet per second is an extraordinary minimum; and that, besides, this canal coming in continuation of that across the Alleghany down the South fork of Roanoke, an accession to the supply will be thus received. This accession will be composed of the water which reaches the forks through the locks, and of part of that wasted at the summit level, or lost by filtration along the canal in its progress from the top of the Alleghany down Elliott's Creek and the South fork, a certain quantity of which will, of course, find its way to the bed of the stream.

The addition thus received at its very minimum, cannot be stated at less than 17 feet per second, which added to 34 makes, at the standard of a most unusually dry season, 51 feet per second at least to be disposed of: out of these, 12 feet will be amply sufficient for the lockage down Roanoke; the balance, 39 feet, would be disposable to be conducted towards the summit level. In dry seasons, most of this supply would be wasted in travelling the distance to the summit level; the loss would depend mostly on the care bestowed upon the construction of the work; but it is probable that at least enough would reach the tunnel to supply adequately the first locks, together with the 8 feet furnished by the Catawba.

These calculations being exclusive of reservoirs and applied to the very unusual case of a drought like that of last year, there can be no doubt of an adequate supply of water.

The practicability of the scheme, therefore, cannot be questioned; the only objection to it, is the great expense it would involve. The canal of junction, counting only from the point where it would diverge from the Roanoke Canal, would not cost less than $ 1,200,000.

As to the connection by a rail-way in this quarter, it presents no difficulty: with some slight deviations, it should be made up the valley of Tinker's Creek, and then down that of Looney's Creek, both of which are quite favorable. Its angle of inclination will not exceed one degree any where; the distance would be about 35 miles. Upon a cheap plan, it might be made for $ 400,000, but upon a perfect one, it would probably cost double.

My operations down Roanoke not having been carried lower than Salem last season, I have not obtained any information in regard to the country between James River and Roanoke, near Lynchburg, where the streams approach very near each other. A canal across, is evidently not practicable; but a rail-way might have advantages here which I think deserving of attention: when this survey is continued, it might perhaps be proper to explore this route. Your instructions on this subject are respectfully solicited.

LOCATION OF THE MIDDLE TURNPIKE.

This road will extend from Alexandria to Difficult Run, in the direction of Leesburg: its length will be 16¼ miles. It is expected to be met by another turnpike 5 miles long, branching off from the Leesburg Turnpike: Thus, a very direct *road* will be formed from Alexandria to Leesburg.

The location of this turnpike follows a pretty direct course, and its angles of ascent and descent will no where exceed three degrees: But, the ground it passes over is generally of the very worst kind for a common road, and becomes actually impassable in wet seasons: so that a capping of stone will be indispensable all the way. This circumstance, while it demonstrates the necessity of the turnpike, will add *greatly to its* cost.

The whole country in the direction of Leesburg is greatly interested in this road, Alexandria offering to it an excellent shipping and its best market; but, the condition of the present road, as was just mentioned, is frequently so bad that waggons are often prevented from travelling it. Its improvement is, therefore, highly desirable.

As to its probable revenue, it depends upon so many variable elements that, under present circumstances, there are no precise data upon which speculation can be based with any degree of certainty: on the one hand, the influence of the turnpike will extend beyond Leesburg to the county of Jefferson; on the other, it is confined by the Little River Turnpike on the south side, and, when the canal along the Potowmac shall have been made, and the Georgetown market revived, there will also be a competition in that direction, which can be counteracted only by conducting the land trade to Alexandria by as good a road as practicable. There the advantage of an immediate shipping may continue to operate in favor of its market; whereas, by way of Georgetown, an additional expense of transportation must be incurred: so that, if a good road be opened, it will be found simpler to go at once to Alexandria, than to use the canal, with the disadvantage of a double translation of the produce.

Amidst all the combinations to which these various circumstances give rise, it would be impossible to form even an approximate estimate of the revenue of the road.

SURVEY FROM MIDDLEBURG TO STRASBURG.

Pursuant to the resolution requiring a survey and examination to be made of a route for a road from the Ashby's Gap Turnpike above Middleburg, through Poverty Hollow, by the way of Front Royal, to Strasburg, in the county of Shenandoah, this duty was performed in the month of June last.

Between Strasburg and Front Royal, the North and South forks of the Shenandoah are crossed, as likewise Passage creek; so that two dividing ridges are passed over, which make the road necessarily uneven. The ground, however, is generally good: the distance to Front Royal is 11½ miles. Soon after leaving this small place, the present road crosses Happy creek, and then begins its gradual ascent to the top of the mountain, through Manassas' Gap, otherwise called Poverty Hollow; a valley which completely belies its name, being in a high and flourishing state of cultivation. This Gap is certainly the best pass across the Blue Ridge, North of James River: the descent Eastwardly is almost imperceptible, and the ascent from Front Royal would likewise be so, were it not for some spurs that are crossed by it, and which a better location might avoid. A better road could be made here, than any where else across the Blue Ridge.

From the Eastern base of the mountain, the present road pursues Goose Creek for 2½ miles, after which the country becomes very broken; but not so much so as to prevent an easy location. For most of the distance, however, the ground is such as to require a capping of stone to make a firm road.

The whole distance to Middleburg by the present road is 40¼ miles; but it is susceptible of being much shortened. The road joins the Ashby's Gap Turnpike near the bridge over Crommel's Run, which appears also to be the best point to bring the new road into the turnpike. The distance thence to Middleburg is a little upwards of 3 miles.

The ultimate aim of this road being Alexandria, instead of joining the turnpike 3 miles above Middleburg, it would be somewhat more direct to leave this place to the North, and to pass by Salem and Hay Market: there are many opinions in favor of this route, which, in the abstract, is certainly the best; but, on the other hand, it must be considered, that the distance saved would not compensate for the accession of expense produced by an extension of the new section of the road; and that, instead of a desirable concentration of interest, an injurious competition would be created.

These competitions between roads leading in the same direction, advocate strongly the importance not to undertake short turnpikes, without having previously enquired into the most favorable direction that a general road would ultimately assume; or else, a more extensive improvement will frequently be the destruction of those that have preceded, unless they be taken in as links, which most generally, when done, is detrimental to the best location of the whole line.

SURVEY FROM BERRY'S FERRY TO STRASBURG.

As far as Nineveh the ground is gently undulated, and a road can be made in any direction. The soil for great part of the way is not firm; but good materials are found in abundance. Between Nineveh and Strasburg, or Stoverstown, the irregularities of the ground increase, particularly across the Piney Hills, but still a very good road may be made through them; the soil is remarkably favorable, and no capping of stone would be required for most of this section.

The distance measured from Strasburg to Berry's Ferry is 23¼ miles: thence to Middleburg it is 15.3-8 along the Ashby's Gap Turnpike, making the whole distance to Middleburg 38 5-8 miles.

The object of the two surveys from Middleburg to Strasburg was probably to institute a comparison between the two routes by way of Berry's Ferry and Manassas' Gap. Each has its advantages.

By Berry's Ferry one river less has to be crossed, and 15 3-8 miles of turnpike are already made, though not a very good road.

Through Manassas' Gap a better road could be made, and it would accommodate the valley of the South fork as well as that of the North fork of the Shenandoah.

As to distance, the latter route is more susceptible of being shortened than the other, 15 3-8 miles of which are already improved; so that the distances by both routes would be about the same. It appears to me, therefore, that present economy might recommend the route by Berry's Ferry; but, that by Manassas' Gap a much better road would be made, the advantages of which would probably in the end compensate for its additional cost.

Almost every new improvement modifies the commercial relations of the surrounding country: The canal along the Potomac will certainly now intercept the trade which used to go to Baltimore, and turn the inland trade towards Georgetown; but the superior shipping of Alexandria will, in a great degree, draw together the importation and exportation in that quarter; and we may expect to see this long neglected city become again a flourishing and bustling seaport. Then, of course, a decided direction will be given to the trade of the valley towards this improved market; and every thing south of Berry's Ferry will certainly seek an avenue through the Blue Ridge to Alexandria. The road under consideration promises, therefore, to be vastly useful and proportionably profitable.

SURVEY FOR A ROAD FROM HARRISONBURG TO FRANKLIN, AND THENCE TO BEVERLEY.

From Harrisonburg to Franklin, the course of this road crosses the Shenandoah Mountain, the Fork or Bull Pasture Mountain, the South fork and the Main fork of the South branch of Potowmac.

Between Franklin and Beverley, a close succession of formidable ridges is traversed: they are, successively, the North Fork Mountain, Spruce Mountain, the Alleghany, Rich, Middle, Chaver's and Cheat Mountains, and likewise the following intervening streams: the North fork of the South branch, Seneca Creek, the Dry fork, the Laurel fork, Glade fork, and Chaver's fork of Cheat River, some of which are crossed several times. These closely repeated obstacles exhibit at one glance, the difficulty of making a road in that direction: One of the ridges, however, as will be seen below, is shunned by the present travelled path, but with a considerable loss of distance.

A road from Franklin eastwardly, is much needed: The only great obstacle in the way is the Shenandoah Mountain, which, at the place where it is crossed by the only path now travelled towards Harrisonburg, is 1,470 feet above its eastern base, and 1,605 above the western one. The distance across being only 3½ miles, a graduation at 5° would require an additional distance of about 3 miles, which it is almost impracticable to obtain in the direction of the present path. *It is the* highest Mountain I have yet explored for a road. *The travelled* path is excessively steep; at one place its grade *is* as much as 23 degrees.

It will be necessary, I think, to change entirely the route, and pass by Briary Branch Gap at the head of the Little fork: The distance by this route will probably be less than by the other; which pursues Dry Run in a right direction as far as Rawley's Spring; but from that point deviates *considerably* to the north. The distance measured from *Harrisonburg* to Franklin is 35½ miles.

From the former place to the foot of the Shenandoah Mountain, no difficulty presents itself; but this ridge, wherever I have seen it, is a formible obstacle. The next ridge, Fork Mountain, is comparatively inconsiderable; it is now passed at Buffaloe Gap, by a road nearly as well graduated as could be done: this Gap, however, is out of the way of the Briary Branch Gap: if, as I presume, the road be taken by the latter, the Fork Mountain must be crossed at Probst's Gap. The survey I have taken will enable me to proceed to the immediate location of the road, if required.

From Franklin to Beverley, the road is very devious, pursuing the valley of the South Branch in a general northerly direction for 5½ miles, in which it crosses it 4 times; the *road* in the mean time not gaining any distance towards Beverley Upon leaving the South Branch, it assumes its proper course. and in a distance of 3½ miles, in which no difficulty is met with, reaches the foot of the North Fork Mountain, which ascends in two miles, and descends in the like number. The present road over it has been cut at some expense: the ground is excellent, but the grade too steep. It is always with regret that I thus see an expense for so useful a purpose fail of its object by an error of location; and labour, which might otherwise have been durable, almost thrown away. A perfect road might have been made here in the first instance; whereas sooner or later, the same expenditure, which might have sufficed at first, will have to be encountered again. . In the me time, the existence of this road will retard for a great length of time probably, the making of a better one: its average grade is about double of what it should be.

From the top of the North Fork Mountain, a full view is obtained of the whole surrounding country; and the gaps in the Shenandoah Mountain and the Alleghany, can be easily traced. In the direction of the latter, nothing encouraging is discovered; all its depressions are elevated several degrees above the high level of the North Fork Mountain itself. The Spruce Mountain presents itself exactly in front: it joins the Alleghany at a high place called the Hunting ground; the valley between it and the Alleghany is occupied by Seneca Creek: So far as I can depend on information, and on the view I had of these broken and lofty Mountains, it does not appear practicable to reach the top of the Hunting ground in any thing like a direct course: what renders this the more probable is, that no path has been beaten up to it, and that the present way of reaching the top of the Alleghany, though very circuitous, is extremely steep and bad, and would certainly not have been exclusively used for so long a time, if the hunters had known of as easy an access in a more direct course. The present path, in order to shun the Spruce Mountain, deviates four miles towards the north, along the North fork of the South Branch; and then, at the mouth of Seneca Creek, turns abruptly in a course rather inclining to the south, which it keeps in the valley of the creek and up to the top of the Alleghany, an additional distance of 9¼ miles, making thus a circuit of 13¼ miles, out of which about 8 are lost distance. The creek, which is wide, is crossed fourteen times; and yet the ultimate conclusion of this great deviation and so many crossings and difficulties in the valley of the creek, is a steep ascent of about 2 miles along a precipitous and wet hill side, close to a torrent, which occupies the bottom of a contracted ravine darkened by the towering height of inaccessible cliffs. The making of a good road amidst so many obstacles, if not decidedly impracticable, is certainly so under existing circumstances.

But, even should these difficulties be overcome by a strong effort, much would yet remain to be done. There would be four more Mountains and as many water courses to cross, in a distance of only 13 miles; some of the streams being traversed several times, (Cheat River itself is now crossed 9 times,) and moreover, the ground for great part of the distance is wet and miry, and could not allow of a good road, unless a very great expense was incurred to drain and cap it. So that, however desirable this communication might be, the difficulties are so great that, under present circumstances, its benefits would fall far short of its expense.

The distance from Franklin to Beverley, by the road travelled, is now 55 miles; but would be increased by a proper graduation of the several ridges traversed, to probably 60.

A road from Randolph county to the eastward, however, is very much needed, and would entirely change the face of that extensive section, which, at present, has no outlet towards the interior of the State. It is a well-known fact, that the only convenient way of travelling from that quarter to Richmond, is by passing through Maryland. But, for this very reason, that there is not even one road from it, instead of dividing between two competing roads, the limited means by which a communication can be opened, they should be concentrated upon one. On this account, it should appear expedient to apply every effort to the road which is already begun, I mean that by Riffle's Run: and, besides, it is easily demonstrable that, as a communication between Beverley and Franklin, the latter route is, from the nature of the country, the most eligible, though at a first glance at the map, it may seem longer. It is, in fact, the only good outlet in this direction, of the whole north-western section of the State.

From Beverley to Cheat mountain, on this route, the ground is as favorable as can be desired: Cheat mountain itself is high, but dry: From its top to that of Greenbriar mountain, the valley of Cheat River is very wet for 5 miles, part of which, however, can easily be drained. The descent to Greenbriar River is over firm ground: great progress has been made in this part of the general road.

From Greenbriar River to a low place in the Alleghany, between the East fork of Greenbriar and the head of the Laurel fork, the access is easy, as is likewise the descent to and down the Laurel fork; so much so, that the U. S. Engineers had selected this route as the most suitable for a rail-way between the Potomac and Kanawha.

From the head of the Laurel fork to Franklin, no farther difficulty exists; so that, on this route, but three mountains would be crossed, and over one of them the ascent and descent are almost imperceptible. On this route also, the only streams crossed would be a small fork of Cheat River, and two of Greenbriar, each of them but once; whereas, on the Seneca route, six mountains, and as many water-courses, are found, some of the latter being necessarily crossed several times, and tive of the ridges being more or less wet: such disadvantages could be compensated only by a great saving of distance; but, upon computation, it appears that the distance by Riffle's Run and Laurel fork, would be about 65 miles, and by the Seneca route, probably 60; the latter, besides, could certainly not be travelled in as short a time as the former.

This comparison leads me naturally to give an account of the progress which has been made on the road from Staunton to Riffle's Run, which the present survey furnished an opportunity to examine.

ROAD FROM STAUNTON TO RIFFLE'S RUN.

It is truly surprising how much has been done on this road with the slender means that have been appropriated to it: from Riffle's Run to Cheat River, the timber has been cut away, and about ⅔ of a mile dug at the end next to the run, but rather too narrow. Unless, however, the work be shortly resumed, the clearing away of the timber will avail but little, as the ground will soon be overgrown again.

On Greenbriar mountain, the road is dug out from the river up to what is called the first top; this section includes a considerable quantity of walling.

Nothing has been done across the Alleghany and Back Creek mountain; it would be very important to open this section, without which the balance of the road is almost useless; but the population is too sparse to do it without assistance: it is in this section, east of the Alleghany, that the road towards Franklin should branch off.

From the foot of Back Creek mountain, across the valley, and up to the top of Straight Creek mountain, the road has been made; on the east side the most difficult part has also been excavated, and along the balance the trees have been removed as far as the foot of Jackson's mountain.

On the Bull Pasture mountain, the road over the most rugged part has been made; it is rather too narrow: it would require but a small sum to finish this mountain: until then, what has been done renders no service.

On the west side of the Shenandoah mountain, a pretty good road has been made all the way up: the descent on the east side of this rugged mountain has been partly dug out.

These disconnected sections render as yet but little service: it is very desirable that the whole line should be soon completed, not only that the intended benefits may be obtained, but actually to save what has been done.

In the report I made on this road in 1827, I presented an estimate of the cost of its completion, amounting to $12,200.

EXAMINATION OF THE PIANKATANK.

I visited this stream about the middle of November *last*. After the long drought which prevailed in the Fall, I had expected to have found it very low; but a fall of rain, which preceded my arrival, disappointed my expectation. I found it up to the level of the Cyprus Swamps, among which it flows. This circumstance, while it prevented an actual survey, which perhaps would not have been essentially serviceable, afforded me an opportunity of judging of its nature when sufficiently full for navigation.

The Dragon Swamp, which is the section I was instructed to examine, is the upper part of the Piankatank, above *Turk's* Ferry. It is a sluggish stream, which shapes its course all the way between swamps covered with fine timber, mostly of the cypress kind. The opening of the navigation of the creek would effect the double object of procuring a market for this very valuable article of commerce, now unproductive; and, after its removal, of enabling the proprietors of the swamps to reclaim them for cultivation.

To accomplish so desirable and important an object, but little is requisite; for, it is not at all necessary that the navigation should be either constant or perfect: provided boats of small burden be enabled to pass up and down occasionally, the end proposed will be attained. This advantage can be secured, I think, by merely removing the obstructions which intercept the current: I was told that this had been done formerly; but that since, the improvement had been neglected: then, it is probable, timber of this kind especially, had not the value it has now.

The stream being sluggish, a slight rain swells it: thus, frequent opportunities are afforded for the passage of boats during the warm season: in the winter, of course, its height is generally adequate to the purpose. The improvement might usefully be carried up to Ware's Bridge.

To clean out the bed, confine it where too wide, and cut occasionally across short bends, is all that I consider necessary: the two latter kinds of improvement being, however, very sparingly introduced; only, I should say, when absolutely indispensable; especially the short cuts, which should be made only where a boat could not turn with ease. Such cuts are often made to save distance; but then, they increase the rapidity of the current, and are apt to induce the formation of bars. Their expense is always considerable, and would be particularly so here, among roots and stumps.

The distance from Ware's Bridge to Turk's Ferry, following the stream, is about 20 miles, the improvement of which, under cautious management, would hardly cost $ 1,000, a sum quite inconsiderable, when compared with the vast benefits it would procure.

FAUQUIER AND ALEXANDRIA TURNPIKE.

This road is in good order from Warrenton to about 4 miles beyond Buckland, a distance of about 12 miles. Some of the stones, however, are too large; and, in places, earth has been mixed with them, to the disadvantage of the carriage-way: this plan, which, in the first instance, obviates the roughness of newly broken stones, proves in the end, an obstacle to their getting firmly cemented and smooth: it should be carefully avoided in repairing.

From the point just mentioned, the Company were engaged in re-modelling the old road: so far as this work had progressed, it was judiciously done. For about 12 miles at its eastern extremity, the old road has not yet received any modification. The benefits of this turnpike will not be complete, until it has been perfected by the new improvements in progress.

Its western extension by a common, but well-located road, is also indispensable to bring it into full operation, and insure upon it an adequate revenue.

LITTLE RIVER TURNPIKE.

This is now a good road, so far as I have seen it; some of the stones with which it is capped, should be broken finer. This road affords an important example of the necessity of attending carefully to the original location and make of such a work: had this been done in the first instance, the expense now incurred in re-shaping and graduating it, would have been altogether saved.

FALLS-BRIDGE AND LEESBURG TURNPIKES.

These roads were in tolerable order, though not as good as they might be made. Their shape is good, but they are capped with too large stones, and they are defective in their location, which by pursuing too closely a straight course, has been made a succession of frequently very steep ascents and descents. Easy undulations render travelling more rapid and pleasant, without a material increase of distance; whereas, straight lines through a rolling country, generally produce a succession of very laborious acclivities and declivities; or, if the grade be reduced to a suitable angle by deep cuts and embankments, the cost of the road is considerably swelled. Of this, the Little River Turnpike furnishes a warning instance: it has been found necessary to take it up and to cut down the tops of its rises and raise its bottoms, in order to bring it to a proper graduation. The expense of this correction must be considerable, and might have been avoided by a suitable location in the origin.

ASHBY'S GAP TURNPIKE.

Its grade in places is very considerable; the stones are generally too large, and the carriage-way is frequently too narrow. The two last defects may be easily remedied: the first would require a change of location; or, in other words, a new road. This is again produced by the general error of aiming at making straight roads.

REPORT

ON THE

CANAL NEAR RICHMOND.

Nothing worth noticing has occurred during the past year on this section of the Canal; except, perhaps, the circumstance of an unusual drought, during which, the lower dam, which leaks much, did not raise the water to its due height.

The opinion I expressed in my report of last year, that the trade would not be less in succeeding years than it was then, has been so far verified by the receipt of tolls: for, although several causes conspired this year to diminish the produce carried, such as an excessive drought, the shortness of most crops, &c., the

Amount of tolls received was,	$48,428 83
The preceding year it was only	47,691 20
Shewing an increase under rather unfavorable circumstances, of	$ 737 63

The growing importance of this Canal brings naturally to the mind, considerations relative to farther improvements connected with it: of this number, its extension downwards to meet the shipping, stands conspicuous, and becomes every day more worthy of serious attention. The advantages of such a connection are, I think, generally admitted: The expense of its execution has been, it is presumed, the only cause of delay: but it is to be apprehended, that delay will increase the ultimate expense, and at last render the plan almost impracticable. It had been proposed to begin the descent above the Armory, in order to allow sufficient space between the locks for basins; but this plan is already rendered inadmissible, by the large factory lately erected on the route designated: and it is not improbable that in a few years the intervening space may likewise be obstructed by new buildings. This view of the subject urges strongly, I think, that an early attention should be given to it: and that the ground, at least, should be secured to the James River Company.

The article of coal alone, which increases every year, would justify this undertaking, at the same time that it would be most benefitted by it. To that raised on this side, it was remarked last year, that the coal from the south side might in a great measure be added, by constructing a short rail-road from the pits to the river. This plan, it is true, had its opponents, under the impression that a rail-road from the pits to Manchester would be preferred by the Colliers. This led to an attempt to form a company for the purpose of constructing the rail-way; but. although the facilities of the scheme were represented greater than I had understood them to be at the time I made my report, and although great advantages were offered, yet but a small part of the estimated capital was subscribed. It is, therefore, reasonable to conclude that a short rail-way from the pits to James River, and the connection of the Basin and Dock, with proper accommodations there for the coal, might safely be constructed without fear of competition.

The crossing of James River in its bed, was also made an objection: but this might be done in several ways, and among others by a bridge provided with a set of rails. The position of this bridge would be advantageous, I think, as regards travelling, as well as for the accommodation of the coal trade.

It can hardly be supposed, that the Colliers of the south side would not avail themselves of the facilities offered to them, by which they would save about 5 cents per bushel of coal. an advantage too important to be neglected. These estimates were presented in my report of last year on this subject. in which I demonstrated, satisfactorily, I believe, that while the Colliers would receive so considerable a benefit. the James River Company would derive an ample return for the capita expended in the improvement, which is deemed, therefore, a safe and expedient undertaking.

As to the chain of locks from the Canal to the Dock, the want of room for intermediate basins might be obviated by having a double line of them, one for ascending, the other for descending: but I should prefer a single line of detached locks.

Another plan has been suggested; it consists in establishing an inclined plane to overcome the whole fall at once, with the assistance of mechanical power. Theory is in favour of this plan; for it is well known that the operation of lockage wastes a great deal of power; while the ascent of a boat would require the descent of only about twice its weight of water applied to machinery, a lock consumes about eight times this quantity: and, moreover, a descending boat which, with well combined machinery, should be made to assist the ascent of another, and thus diminish the expense of power, affords no such assistance in locks; but, on the contrary, wastes frequently nearly as much water as an ascending boat.

But, in the execution, an inclined plane for the transit of boats, presents great practical difficulties; and it is only, I think, on a small scale that it can be successful: moreover, although the passage of a single boat may be effected in less time along an inclined plane, than through a chain of locks, the case is different for a number of boats coming together: for, each will be delayed, either at the locks or inclined plane, as many times the duration of the passage of a boat through one lock, or along the plane, as there are boats before it; which, beyond a certain number of boats, will render the inclined plane more slow than the locks.

Suppose, for instance, a fall of 100 feet overcome by 12 locks, and an equal fall overcome by an inclined plane: it would take a single boat 72 minutes, about, to pass the locks, and, say only 20 to ascend the plane; shewing an advantage of 52 minutes in favor of the plane: But, now conceive 20 boats to be in waiting; after the passage of the 1st through one lock, the 2d follows, then the 3d, &c., so that, if it take 6 minutes to pass one lock, the 20th boat will be ready to enter the 1st lock in 114 minutes, and have overcome the fall in 186; whereas, at the inclined plane, the 20th boat will be delayed 19 times 20 minutes, or 380, and have passed it only after 400 minutes. So that in the case of an active trade, the locks would prove more expeditious. The want of water alone, therefore, would induce me to recommend an inclined plane in preference to locks.

Before dismissing the subject of the canal, I beg to add a few words on the continuation of the improvement.

In 1826, I laid before your honorable body, calculations. from which it appeared that the expense of a canal up to Lynchburg might be met by a due return; depending, however, upon a probable increase of trade, and that the improvement by locks and dams, without requiring such an increase. would immediately produce a proper dividend.

From and to Lynchburg, the trade was then *computed at* 34,224 tons of produce and merchandize, and 400,000 bushels of coal: in 1827, the trade was 40,800 tons, and 529,343 bushels of coal; and last year, as appears from the receipts of tolls, it has still increased probably 600 tons. So that, in this short period, the augmentation has already reached to about the amount which would re-pay for the canal, and procure, on an improvement by locks and dams, a considerable diminution of the cost of freight, as well as an adequate return for the expenditure.

As regards the choice between these two modes of improvement, I discussed in 1826, their relative merits under every point of view which presented itself to my mind. The most prevalent opinion, it soon appeared, was in favor of the lock and dam system, which promised adequate benefits, at a less expenditure. Last year, after a minute survey of the river, I answered some new objections raised against this mode of improvement.

Since then, the subject has received more universal attention, and elicited many enquiries and various opinions; *among* which, uncertainties were expressed by some, as to the probable result of actual experiment; though, for my part, I consider that the experiment has been made in detail, as conclusively as if it had been applied to the particular object in view. There is, it appears to me, nothing new, nothing to be tried here; every element of the subject is perfectly known: the making of tight and permanent dams and of locks on a large river, the motion of steam-boats in smooth water, the time and manner of passing locks, the mechanical effect of steam power all these things are known: they are the elements of the question; they are the parts of a whole, the combination of which involves no new principle, and consequently requires, in my opinion, no new experiment.

Still we had accounts relative to Northern improvements, tending to establish that, however plausible the arguments and speculations in favor of the proposed improvement, it had elsewhere eventuated in failures: the most prominent instances quoted, were the lock and dam improvement of the Connecticut River, said to have failed, and that of the Schuylkill, reported to have resulted in disappointment.

With the confidence I had in the facts and principles which had directed my opinion on the subject, I entertained no doubt that the report relative to these Northern rivers, had its foundation in some peculiar circumstances not applicable here, but which had not been fully investigated: this I determined to do; and, with this view, wrote to gentlemen of the most respectable standing. I was very politely favoured with prompt replies, the substance of which is as follows:

The improvement of the Connecticut River required charters from four States interested in it; and it was only in the Spring of last year, (1828,) that the necessary powers have been complete: so, that the report of a failure had anticipated the undertaking.

The cause of this is probably that, as I am informed, the city of New Haven had undertaken a canal to Farmington, Connecticut, (9 miles from Hartford,) and thence to the North line of the State, with a view of continuing the same canal to meet Connecticut River at Northampton. The object of this canal was apparently to present a shorter route to New York, and thereby divert the trade from the river towards New Haven. This circumstance has, of course, produced a diversity of opinions, and suggested to many that the improvement of the bed of the river should be abandoned: hence, very likely, the report alluded to.

Still it appears that the majority remains in favour of going on with the improvement; part of which at Enfield's Falls, has actually been begun, a short canal 70 feet wide being in construction there; and it is contemplated, that ere long, 90 miles of the river will be improved.

The great width given to the canal is evidently intended for steam navigation, as will farther appear from the concluding paragraph of the communication I had on the subject, which is in these words: "The objections to making a canal in this valley, as the subject appears to my mind, arise from the great cost of constructing it, the expense and difficulty of maintaining it, and the amount of trade to be charged with tolls, not great enough to afford an adequate remuneration to the stockholders. I have a high opinion of the utility of canals with a towing-path. The method of towing small boats on shoal water is not well understood here. A large and steady business is required to justify transporting it by steam power: on the other hand, such a business is still more necessary, to warrant the great expense of an independent canal," &c.

The information, a summary of which I have just presented, was received from the President of the Company himself, Mr. Alfred Smith. His letter was too long for insertion, but may be seen in your office, where a copy has been left.

As regards the Schuylkill, my information is also derived from the President of the Company, Joseph Lewis, *Esq.* It being relative to a work actually in operation, *I will quote* more of his letter, especially as it gives rise to some observations applicable to the improvement of James River:

"Every day's experience confirms me in believing, that dams, properly constructed, with suitable channels and tow-paths, are very preferable to a canal. They are, *if* the dams are properly made, not liable, like canals, to leaks and breaches in the bank; they cost less, and the ponds are navigated with more speed by the same power. Steam power *can be* used, without injury to the works, which cannot be done *upon* canals, and a horse can draw near double the weight, or *what is* equivalent, can go with near twice the speed on a pool, that he can on a canal. Except in a time of freshet, the current is not much greater; and this, upon the Schuylkill, is an advantage, as ¾ of the trade is down stream, and not ascending; coal, wheat, corn, iron, &c., being principally brought down and only groceries and store goods taken up: but, even with a current of two miles, a horse would propel as much weigh on a pool as he could in a canal, as resistance is lessened by expansion in a broad sheet of water. The original intention of the navigation on the Schuylkill, was simply to make slack water; and hence, any fixed channels or tow-paths were not contemplated: subsequently, however, both were found indispensable, and both have been constructed; but neither as perfect as they might have been made, if they had been forme before the dams were erected. At first, several dams wer carried away; but for several years those constructed hav uniformly stood well, and, if properly built, and well backed I believe they can be made as firm as any rock in the river The channels are intended to be about 4 feet deep, and ar cleared out next the tow-paths about 35 to 40 feet wide bottom. The tow-paths are 6 to 10 feet wide at top, covere with gravel about 4 feet above common water; the sides a angle of 33 degrees, and faced with stone. They withstan so far the freshets, which generally run off so as to impede th navigation not more than two or three days at a time, even a considerable freshet occur.

"In some places, extensive canals are made inland from one dam to another; in others, the dams connect next to the land by one or more locks, 17 feet wide by 80 feet long. The whole extent of our navigation is 108 miles, of which about 64 are canal, and the remainder pools.* The speed of a light boat on a canal does not exceed four miles an hour: and then, it is injurious to the work, while on a pool 6 miles can as easily be done, without injury at all.

"At present the only power used is horse power. A steam engine has been tried, but as the wheel is necessarily placed in the stern, it has not been found to add speed or economy, the width of the steam-boat being regulated by that of the locks.

* * * * * *

"One horse can draw 30 tons in a boat properly constructed. The height of the dams is regulated by the adjacent ground, so as to prevent the water flowing round them, and are placed at such distances apart as to secure a proper depth of channel. Our dams vary in height, from 3 to 27 feet; there are 31 dams and 125 locks on the whole line.

"That there is a diversity of opinion regarding canals and pools, there is no doubt. The objection to the latter being, that freshets affect the navigation; but, by making proper basins along the works for boats to enter, the danger is obviated, and though the vessel has to lay by two or three days at times, yet taken upon the average, I believe more work can be done in a season on the pools than on the canals, and I am sure with less labor to the horse.

"Canals are subject to leaks and breaches: they require great care in feeding: they are expensive in their construction, and the damages occasioned by passing through farms, &c. are very costly, and they must be supplied with water by dams, which must, of course, at all events be erected. No description can afford an adequate idea of the manner the dams and pools are formed, with their tow paths, &c.: it would be well for those proposing to improve the rivers in Virginia, to come and look at our works; there is one dam now erecting at the head of our works, which will not be closed for a week or ten days. * * * * *

* * * * *

Sluices in dams should be made, so as to draw down the water when needful, to remove obstructions when they occur in the channel."

---

* The fall of the river is 610 feet in all, and 125 locks.

As to the permanency of the depth of the ponds, their healthiness, and the effect of the dams on the adjacent lands, statements were obtained from the same source: they are, in substance, in accordance with my own.

Such parts of the above communication as are applicable to James River, will readily appear. I will, therefore, subjoin here only such observations as arise from differences of circumstances or localities.

In the first place, a decided opinion is expressed in favor of the mode of improvement in operation there, though it is admitted that it was not made as perfect as it might have been.

And in the next, it would not at all be surprising that many should think that a canal might have been, at least, as advantageous as the improvement executed. For, it will be observed, that there is the great proportion of 64 miles of canals out of 108; these, of course, occur at the worst places, and, consequently, it is not at all improbable that all the canals might have been connected through the remaining good ground, at an expense, perhaps, less than that of the additional dams, paved tow-paths, and costly blasted or excavated channels, which at first "not contemplated," were "subsequently found indispensable." These extra works lead to some other remarks connected with the kind of power used.

In my former reports, I have had occasion to mention, that the application of steam power was the chief recommendation in favor of a system of locks and dams, and though at a first perusal, it may not appear so, the above extract is confirmatory of this opinion.

Towing with horses along a broad river, is attended with many difficulties; it frequently happens that the channel is away from the bank, and then the power of the horses is applied at a considerable distance in an oblique direction, and consequently at great disadvantage. The hauling line has often to be lengthened or shortened, and it is not unusual for horses drawn thus sidewise by the resistance of the boats, to be borne down a slippery bank into the stream: it is in order to obviate this, that "it is found indispensable," in such cases, to "clear out channels near the tow-paths." But, in the very common case of a gently sloping beach, there is no other alternative than to drive the horses in the water itself. Hence it is, that the expense of the improvement of the Schuylkill was swelled by the additional works above enumerated, found necessary to facilitate the towing of boats; whereas, steam-boats, capable of pursuing the natural channels, besides their know-advantage of being a cheaper power than horses, would save the expense of such works. Hence, great economy must result from the introduction of steam power in the navigation of artificial ponds, where a river is wide and the fall not great.

But, here an experiment is mentioned, which resulted in the conclusion, that steam did not "add speed or economy." Against this fact, no argument could stand, if circumstances and localities were the same; but, far from its being the case, they are such as would have led to the same conclusion, by applying to them the principles and calculations of my reports of 1826 and 1828, on this subject.

By reference to the tables of my report of 1826, it will be seen that I have established the limits where navigation by steam would cease to be cheaper than horse power on a canal. This occurs when the fall in the river exceeds 4 feet per mile: on the Schuylkill it is 5 feet. So that the result as to economy, might have been foreseen: over four feet fall, steam power is cheaper only as regards the saving of the expense of certain works required for towing, but not on account of transportation itself. On a narrow river having much fall, towing by horses would certainly be preferable; but not so when the fall is little and the river broad As to speed. the same tables (report of 1826, page 464,) shew that with an average load, a fall exceeding 4 feet would reduce the speed (on account of delay at the locks,) below the usual speed on canals. This was verified on the Schuylkill.

If, then, the improvement on that river had consisted only of locks and dams, from the principles themselves, which I had advanced, it might have been concluded that steam power would have added "neither speed nor economy" in the navigation of the ponds, provided as they were with tow-paths and channels.

But the case was still much more unfavorable; out of a navigation of 108 miles, 64 were canalled, and it is well known that on canals steam-boats do not answer a good purpose; so that, even if some advantage had been obtained in the navigation of the ponds, it could never have made up for the loss on the canals.

Therefore, 1. In a lock and dam improvement intended for steam-boats, canals should be avoided as much as possible.

2. Under a fall of 4 feet per mile, they will produce both speed and economy of transportation.

3. Above this average fall, steam-boats will procure no other economy than that resulting from obviating the construction of tow-paths and channels.

All of which conclusions flow from my own calculations, and are verified by the experiment on the Schuylkill.

It appears farther, from an article lately inserted in the newspapers, that a Company has applied to the Legislature of Pennsylvania, for a charter to improve the Susquehanna by locks and dams, with a capital of $ 1,500,000. This demonstrates very conclusively, that the experience obtained on the Schuylkill is far from having rendered this mode of improvement unpopular there.

I flatter myself, gentlemen, that you will excuse this digression, in consideration of the importance of the matter. It was my wish, and I conceive it my duty, to furnish every information I am possessed of, on a subject which excites at present so much interest.

BLUE RIDGE CANAL.

This work was duly attended to during the last year. The necessary repairs have been made; they disclose many hidden imperfections of this great work. The lower locks have been put in as good order as their original defects would allow.

Complaints have been made, that there was a deficiency of water for some distance near the head of the canal: this I have already noticed in a former report. I mention it again, merely because blame is attached by some to the superintendents, whereas it is most evidently an original error in the construction, and cannot now be remedied without extra digging, at some considerable expense and inconvenience.

The north side of the canal leaks a great deal, owing to an erroneous method of puddling in its construction, and to the want of a double bank along cliffs, which should always be raised. The leakage is rather increasing, and renders it necessary to let the water run through the locks, to make up for losses This is injurious to the works.

The weeds in the canal have become a great impediment: but I see no method to get rid altogether of this growth, which pervades the water of James River for some distance below Lynchburg to a considerable extent upwards. They spring up in every natural pond of the river, and almost choke up the canal in places.

Private bridges have been authorised over the canal, in various places. They are generally too low, and consequently produce occasional collisions between the owners and boatmen. Some regulation appears desirable on this subject, especially because the officers who grant the perimission are liable to change, when it must be difficult for their successors to ascertain the nature of the understanding on the subject.

All of which is respectfully submitted.

C. CROZET, *P. Engineer.*

TABLE OF INSTALMENTS
ON
SUBSCRIPTIONS TO STOCKS,

Authorised by Acts of Assembly, and made by the Board of Public Works, *payable in* 1829, *and subsequent years.*

	No specified time.	1829.		1830.		1831.		TOTAL.
		January.	*July.*	*January.*	*July.*	*January.*	*July*	
Staunton and James River Turnpike Company, part of third, and the fourth,	-	6,250 00	-	-	-	-	-	6,250 00
Falls Bridge Turnpike Company, part of third, and the fourth,	-	2,500 00	-	-	-	-	-	2,500 00
Shepherdstown and Smithfield Turnpike Company, part of second, and the third and fourth,	-	5,803 75	4,643 75	-	-	-	-	10,447 50
Lower Appomattox Company, first, second, third and fourth,	-	-	4,000 00	4,000 00	4,000 00	4,000 00	-	16,000 00
Tye River and Blue Ridge Turnpike Company, first and second,	-	-	1,200 00	1,200 00	-	-	-	2,400 00
Rappahannock Company, first, second, third, fourth and fifth,	-	-	6,667 00	3,334 00	3,333 00	3,333 00	3,333 00	20,000 00
Slate River Company, (when called for,)	4,692 00	-	-	-	-	-	-	4,692 00
	4,692 00	14,553 75	16,510 75	8,534 00	7,333 00	7,333 00	3,333 00	62,289 50

R. E.

J. BROWN, Jr. *Second Auditor.*

DUTIES

OF THE

PRINCIPAL ENGINEER,

FOR THE YEAR 1829:

Adopted by Board of Public Works, 29th January, 1829.

At a meeting of the President and Directors of the Board of Public Works, on Thursday, the 29th day of January, 1829, the following Report and Resolutions were adopted:

The Committee, to whom was referred the subject of prescribing the duties of the Principal Engineer for the present year, report:

That during the past year, the Principal Engineer was actively employed in fulfilling the orders made at the last and previous Sessions of the Board; some of the latter of which had been deferred, in consequence of his attention being called to the James and Jackson's Rivers. The number of surveys required has, however, been reduced by the operations of the past season. There remain, notwithstanding, more than can, in all probability, be executed within the year. For this reason, it will not be advisable to require surveys to be made, except in cases where some well-founded expectation exists of improvements being undertaken; and caution should be observed in the selection of objects of survey and examination, lest the time of the Engineer may be employed on subjects of little utility, to the postponement of such as are of importance.

Under this view of the manner in which the time of the Engineer should be employed, and of the surveys to which his attention should be directed, the following enumeration of the duties to be performed the present year, in which is embraced the unexecuted orders of the Board, is submitted:

Survey of Meherrin River, from Murfreesborough to the highest point susceptible of navigation.

Survey of Nottoway, from its mouth to the highest point to which navigation may be extended.

Survey and examination of the Roanoke River, from Pannill's Ferry to the highest point susceptible of navigation. and examination of the country between that and James River, with a view to a connection by a canal or rail-road.

A survey of the shortest and most practicable route from Covington to Richmond.

An examination of the route for a road from Harper's Ferry, through the Valley of Virginia, to the northern boundary of Tennessee.

A survey for a road from Warrenton to Staunton.

A survey from Harrisonburg, through Brock's Gap, to the South fork of the South branch of the Potowmac.

A survey for a road from the Great Falls of Kanawha to Point Pleasant, on the north-east side of the river.

A survey of a route from Charleston, in Kanawha county, on both the north and south side of Kanawha River, to Johnson's Shoals, and thence to the mouth of Guyandotte.

A survey and location of a route for a road from Beverley to Clarksburg.

A survey from Gauley Bridge to Nicholas Court-house, Haymond's Salt Works, Lewis Court-house, and Salem, in Harrison county.

An inspection of the location of the road between Staunton and Parkersburg.

A survey of the Roanoke has been in part executed, and is thereby recommended to early attention, as not much time or labor will be required to place the Board in possession of the fullest information in relation to it. In this examination, it is recommended that an inspection of the improvement of the Roanoke River by sluices should be made, for the purpose of ascertaining whether the improvement effected will form a part of the extension of the navigation in the manner contemplated. The surveys recommended by resolutions of the General Assembly and the House of Delegates, are not deemed of sufficient importance to supercede the duties already required to be performed: and as they cannot probably be executed within the year, it is recommended that after the fulfilment of the instructions given, they be undertaken and made in the following order:

A survey of Aquia Creek.

A survey of Occoquan.

A survey of Opecon.

A survey of Sleepy Creek.

The interest of the State and its citizens in the improvements of the Roanoke River, gives to the application of the Superintendent of the Roanoke Navigation Company, strong claims to the consideration of the Board. It is requested, that the Engineer may be instructed to repair to Weldon, to locate the locks designed to connect the Upper and Lower Roanoke, and to give plans and specifications for their construction. As this service may be performed without interfering with any of the duties prescribed, the great importance of correct information as to the location and proper construction of the locks contemplated to be built, upon which the value and future utility of that improvement so much depend, induces your committee to recommend the adoption of the following resolutions:

Resolved, That the Principal Engineer be instructed to repair to Weldon, as early as may be convenient, for the purpose of locating the locks of the Roanoke Navigation Company, and giving plans and specifications for their construction.

Resolved, That if, after the adjournment of this Board, the General Assembly shall pass any laws or resolutions, requiring the services of the Engineer, they be referred, and they are hereby referred to the Ex-officio Directors, and made subject to their order.

A true copy from the minutes.

J. BROWN, Jr.
Second Auditor.

* * *

By the Ex-Officio Members, April 23, 1829.

Resolved, That the Principal Engineer proceed, *in the first place*, and without delay, to designate the location and plan of the dam and works to be constructed by the James River Company, between Mayo's Island and the northern abutment of said Mayo's Bridge, as required by the second section of the Act of the 28th February, 1829, entitled, "An Act to amend the several Acts concerning the Richmond Dock Company:" And *secondly*, as soon as practicable after the performance of that duty, to attend to the execution of those prescribed to him by the Act of the 30th January, 1829, entitled, "An Act providing for the extension of the Kanawha Turnpike Road to Big Sandy River." with this special understanding, however, that, in compliance with the eleventh section of the Act of 27th February, 1829, (chap. 73,) entitled, "An Act prescribing a Tariff of Tolls on the Kanawha River, and for other purposes," "he attend during some dry season, to view the several improvements made on the said river:" *And lastly*, that the Principal Engineer, after having completed the above mentioned services, conform himself to the directions contained in the aforesaid resolution of the Board of the 29th of January last.

A true copy from the minutes.

J. BROWN, Jr.
Second Auditor.

A.

Summary statement of the Tolls received by the James River Company, on the LOWER SECTION OF THE CANAL, *and of the application of the said Revenue, in the year ending the 31st December, 1828.*

Tolls on produce and merchandize, as per statement E., viz:		
Ascending,	42,930 35	
Descending,	5,492 43	
At basin,	6 05	
		48,428 83
Rents of water,		3,510 00
Rents of lots,		575 00
		52,513 83
Charges, viz:		
Lock keepers' wages, including pay of hands employed by them,	2,731 25	
Superintendent of canal,	800 00	
Toll-gatherer's salary, including clerks,	2,000 00	
Clerk to Board, $ 100, door-keeper, $ 40,	140 00	
Blank warrants for Second Auditor, $ 3, postages, $ 25,	28 00	
Fee bills, $ 11 26, copies of acts, $ 3 75,	15 01	
Expenses of Directors, on a tour of examination to Maiden's Adventure, in April,	20 64	
Blank tickets and books for toll-gatherer's office, &c.	74 83	
Books and stationery for inspector's office at lower arch,	16 75	
Patent balances for ditto,	55 00	
	5,881 48	
Repairs, including hire of 8 labourers for the year,	3,297 18	
		9,178 66
Nett revenue from the Lower Canal,		$ 43,335 17

Applied as follows:

*For payment of dividends on *700 shares, in July, 1828, and January, 1829,*	16,800 00
To surplus fund, at same periods,	26,535 17
	$43,335 17

Note.—The nett amount of tolls for the year, from all the improvements of th James River Company, were as follows:

Lower Canal, as above,	43,335 17
Blue Ridge Canal, per statement B.	381 27
Kanawha Turnpike, per statement C.	2,854 37
Kanawha River, per statement D.	985 00
Total,	$47,555 81

* *Note.*—These 700 shares are owned as follows, viz:

284	by the Board Public Works,	436
152	Literary Fund,	
100	Washington College,	
22	William and Mary College,	
142	Individuals,	
700		

E. E.

January 1st, 1829.

J. BROWN, Jr.
Second Audit

B.

Summary statement of the Tolls received at the MOUNTAIN SECTION OF THE JAMES RIVER CANAL, *during the year ending* 15*th November*, 1828.

Tolls on descending boats, per statement F.		2,085 07
Ascending boats,		315 92
Bridge,		91 61
Tow-path,		91 58
		2,584 18
Charges, viz:		
Salary of collector, (who acts also as lock-keeper, and furnishes two hands,)	870 83	
Salaries of two lock-keepers, who furnish each one hand,	624 99	
House rent for one lock-keeper,	24 00	
Salary of overseer,	229 19	
Negro hire, and all other expenses and repairs,	453 90	
		2,202 91
Nett tolls,		$ 381 27

E. E.

J. BROWN, JR.
Second Auditor.

January 1*st*, 1829.

D.

Summary statement of the Tolls received on the KANAWHA RIVER, *during the year ending 15th Nov.* 1828.

From 1st April to 26th August, - -		1,013 14
22d September to 15th November,		431 18
(Ascending $486 79. Descending $957 53.*)		1,444 32
Expenses, viz:		
Salary of John Staples, late Collector, to 21st August,	$250 82	
Salary of Wm. Whitteker, present Collector, 55 days,	105 05	
Office rent, - -	27 18	
Assistant, - -	36 00	
Sheriff's fees, Boats, &c.	40 27	
		459 32
Nett proceeds,		$985 00

(See statement G.)

* Of the sum received for descending Tolls, ($ 957 53,) $ 955 86 was for Salt, say on 95 586 bushels. It is estimated, that 800,000 bushels of this article are annually made at the Kanawha Salines.

E. E.

J. BROWN, Jr.
Second Auditor.

January 1st, 1829.

E.

List of Articles which paid Toll on the LOWER SECTION OF THE JAMES RIVER CANAL, *during the year ending the* 31*st December*, 1828.

DESCENDING.

22,898		hhds. tobacco,	Producing *in tolls* $42,930 35
592		hhds. stems,	
121,390		bushels wheat,	
87,635		barrels flour,	
19,824		bushels corn,	
595,327		bushels coal,	
268	12-20	tons bar iron,	
937		tons pig iron,	
951	1-2	tons stone,	
1,902		cords wood,	
373,100		barrel staves,	
75,800		hoop poles,	
419,400		feet plank,	
14,919		cwt. goods unenumerated,	
96	5-8	hhds. whiskey,	
230		empty boats,	
13	1-4	tons hay,	
2	3-4	hhds. rum,	
		Boats passing through the Basin locks,	$6 05

ASCENDING.

47,069		cwt. unenumerated goods,	Producing in tolls $5,500 18
14,842		sacks salt,	
141	3-4	hhds. rum,	
946	1 4	hhds. whiskey,	
288	17-20	tons bar iron,	
415	1-4	tons plaister,	
17,389		bushels corn,	
34,700		feet plank,	
340		barrels flour,	
23	3-4	tons hay,	
187		tons pig iron,	
400		bushels wheat,	
68,200		shingles,	
1,500		lathes,	
20		bushels coal,	
200		staves,	
Deduct toll on 62 cwt. unenumerated goods, on which toll was three times paid,			7 75
			$5,492 43

Down loads,	42,930 35
Up loads,	5,492 43
Passed through Basin locks,	6 05
	$48,428 83

E. E.

J. BROWN, Jr.
Second Auditor.

January 1st, 1829

F.

List of Articles which paid Toll on the MOUNTAIN SECTION OF THE JAMES RIVER CANAL, *during the year ending the 15th November*, 1828.

DESCENDING.

609 2-3	hhds. tobacco,	Contained in 940 boats, and Producing, in *tolls*, $2,085 07
2-3	hhds. rum, wine, &c.	
1,396 5-6	hhds. whiskey,	
10 5-6	hhds. oil, cider, &c.	
8,993 1-2	bbls. flour,	
1,179 1-2	tons pig iron,	
330 11-20	tons bar iron,	
15 10-20	tons hemp,	
127	tons lime,	
72,875	feet plank and scantling,	
1,200	cwt. goods, in boxes and trunks,	
46,519	cwt. goods, in hhds. or bbls.	
7,044 1-2	bushels grain,	
12	empty boats,	

Bridge tolls,	$91 61
Tow-path tolls,	91 58
	$183 19

ASCENDING.

13 7-12	hhds. rum, wine, &c.	Contained in 557 boats, and Producing in tolls, $315 92
1 2-3	hhds. whiskey,	
45 1-3	hhds. molasses,	
307 1-2	bbls. fish,	
23-24	tons castings,	
1 3-4	tons bar iron,	
112 1-5	tons plaister,	
1,259	sacks salt,	
18 1-2	cords bark,	
500	feet plank, &c.	
96,210	cwt. goods, in boxes, &c.	
197,655	cwt. goods, in hhds. &c.	
44	bushels grain,	
37	empty boats,	

Descending,	$2,085 06
Ascending,	315 92
	$2,400 98

E. E.

J. BROWN, Jr.
Second Auditor

January 1st, 1829.

G.

List of Articles which paid Toll on the KANAWHA RIVER, *during the year ending the 15th November,* 1828.

ASCENDING.

1,408	barrels flour,	Producing in tolls $486 79
388	barrels whiskey,	
23	barrels salted fish,	
53	barrels cider,	
2	barrels apple brandy,	
3	barrels pickles,	
1 1-2	barrels oil,	
454	galls. wine and foreign spirits,	
9,230	bushels corn,	
395	bushels potatoes,	
297 1-2	bushels apples,	
69	bushels dried apples, &c.	
48 1-2	bushels beans,	
21,724	pounds coffee,	
29,844	pounds sugar,	
41,318	pounds dry goods in boxes, &c.	
94,127	pounds unenumerated articles,	
9,161	pounds tallow and lard,	
6,851	pounds nails,	
2,407	pounds cordage,	
1,490	pounds cheese,	
123,460 1 2	pounds bacon,	
9 19 20	tons bar iron,	
79 5-20	tons pig iron and castings,	
344,400	hoop poles,	
1,732	empty barrels,	
78,000	barrel staves and heading,	
18 1-2	bushels wheat,	
2 18-20	tons hemp,	
200	feet plank and timber,	
52	empty boats,	

DESCENDING.

95,586	bushels salt,	Producing in tolls, $957 53
150	pounds coffee,	
4	barrels flour,	
24	bushels potatoes,	
1-2	chaldron coal,	
1-2	ton pig iron,	
150	pounds bacon,	
1,350	pounds non-enumerated articles,	
1	carryall,	

E. E.

J. BROWN, Jr.
Second Auditor.

January 1*st*, 1829.

H.

GENERAL STATEMENT

Of the amount, and application of the nett Tolls received on the MOUNTAIN SECTION OF THE JAMES RIVER CANAL, *the* KANAWHA ROAD, *and the* KANAWHA RIVER, *from the periods when Tolls were respectively exacted thereon, to the 15th November,* 1828.

			Amount Tolls received.	*Charges of improvements.*
Blue Ridge Canal,	-	1st Feb. 1827, to 15th Nov. 1827,	1,867 25	4,509 02
		15th Nov. 1827, to 15th Nov. 1828,	2,584 18	2,202 91
Kanawha Road,	-	From 20th Sept. 1824, to 15th Nov. 1827, per statement C.	13,577 15	3,580 33
Kanawha River,	-	From 1st April, 1828, to 15th Nov. 1828,	1,444 32	459 32
			19,472 90	10,691 58
		*Balance, being nett amount after paying expenses,	-	8,781 32
			$19,472 90	$19,472 90

* *Note*.—This balance has been applied as follows:
Carried to surplus fund, (included with the surplus of the Lower James River Canal,) 31st December, 1825, 1,362 16
Ditto, July, 1826, 3,098 69
Ditto, September, ", 2,099 79
Ditto, [illegible]

E. E.

J. BROWN, JR.
Second Auditor

1.

Summary statement of Loans *obtained by the James River Company, and of the* Expenditure *thereof, to the* 31*st December*, 1828.

Amount of loans obtained, as heretofore stated,			1,230,000	00
Premiums on part of said loans,			2,500	00
Proceeds of sales of $ 40,300, certificates James River Company loan, belonging to surplus fund,			40,400	75
			1,272,900	75
Expended as follows:				
On lower section of James River Canal,	637,782	34		
On mountain section of ditto,	365,207	02		
On Kanawha Turnpike Road and bridges,	170,882	49		
On Kanawha River,	79,858	17		
Salaries of Commissioner Kanawha Road and Navigation, and his assistants,	7,074	73		
Salaries of 2d Auditor and Clerk,	4,077	16		
			1,264,881	91
Balance in the Treasury, as per statement K.			$ 8,018	84

E. E.

J. BROWN, Jr.
Second Auditor.

January 1*st*, 1829.

ACTS AND RESOLUTIONS

OF THE

GENERAL ASSEMBLY,

RELATING TO THE

FUND FOR INTERNAL IMPROVEMENT.

(Passed at the Sessions of 1826-27—1827-28—1828-29.)

AN ACT,

To punish the burning or otherwise injuring of public property, and for other purposes.

(Passed March 8th, 1827.)

2. *And be it further enacted*, That, if any person or persons shall, wilfully and maliciously cut down, or otherwise destroy any canal, or the arch, or lock or locks of any canal; or any bridge, dam or abutment, of the value of one hundred dollars, or shall in any other manner whatever, unlawfully, wilfully, and maliciously, injure or endamage such canal, arch, lock, bridge, dam or abutment, to the amount of one hundred dollars, every person so offending, his, her, and their aiders and abettors, shall be deemed guilty of felony; and if he, she or they be a free person or persons, shall suffer imprisonment in the public jail and penitentiary, for a term not less than two, nor more than ten years; and if he, she or they be a slave or slaves, he, she or they shall suffer death without the benefit of clergy.

AN ACT,

Concerning the rebuilding Gauley Bridge, the payment of existing contracts, and for other purposes.

[Passed [illegible].]

1. Be it enacted by the General Assembly, That the President and Directors of the James River Company, are hereby authorized and directed to dispose of so much of the *James* River company's unappropriated fund belonging to the Fund for Internal Improvement as will produce the sum of forty thousand dollars, which said sum is hereby appropriated for the purposes hereinafter mentioned.

2. Be it further enacted, That so much of the said sum as may be necessary, shall be and is hereby appropriated to rebuilding the bridge across Gauley River, to be expended for that purpose, under the direction and superintendence of the Commissioner of the Kanawha Road and Navigation, who shall cause the said bridge to be built upon such model, as in his opinion will combine economy with public utility.

3. Be it further enacted, That the sum of twenty-eight thousand dollars of the aforesaid sum, shall be and is hereby appropriated for the purpose of enabling the James River Company and the Commissioner of the Kanawha Road and Navigation, to complete the works already contracted for and remaining unfinished, and to pay what may be now due on existing agreements.

4. Be it further enacted, That hereafter the following tolls shall be demanded and received on the tow-path of the mountain section of the James River Canal, to wit: for every person on foot, six and a quarter cents; for every person on horseback, six and a quarter cents; for every horse, mare, mule or work-ox, two cents; for every head of neat cattle, two cents; for every score of sheep, hogs or goats, twelve and a half cents; and so in proportion for any greater or less number: And it shall hereafter be the duty of the Receiver of the Tolls of the mountain section of the James River Canal, and the bridge and tow-path thereof, to make quarter-yearly payments of tolls received by him, to the Commissioner of the Kanawha Road and Navigation, who shall in like manner make quarter-yearly settlements of the said tolls with the President and Directors of the James River Company: And it shall be lawful for the said Commissioner to change the location of the toll-gates on the Kanawha Road, and to make contracts for keeping the said

road in repair, by sections, for any period not exceeding three years, taking bond and security of the contractor or contractors, in a reasonable penalty, and conditioned for the faithful performance of such contract or contracts: And he is also hereby authorised and empowered to erect such buoys and ring-bolts on the Kanawha River, as may in his opinion be expedient for the safe and convenient navigation thereof, and if necessary, to cause a house to be erected in or near the said river, for the collection of tolls, and registering and numbering all boats navigating the said river, and to make all such other arrangements as may be necessary for collecting the tolls on the said river.

5. *Be it further enacted*, That the Commissioner of the Kanawha Road and Navigation, shall hereafter receive an annual salary of eight hundred dollars, in lieu of the salary now allowed him by law.

6. This Act shall be in force from the passing thereof.

* * *

AN ACT,

To amend the Tariff of Tolls on the Blue Ridge Canal, and for other purposes.

(Passed March 8th, 1827.)

1. *Be it enacted by the General Assembly*, That it shall be lawful for the President and Directors of the James River Company, in trust for this Commonwealth, to demand and receive, on the Blue Ridge Canal, in lieu of the tolls heretofore allowed by law, tolls according to the following tables and rates, to wit: On every hogshead of tobacco, sixty cents; on every hogshead of tobacco-stems, fourteen cents; on every hogshead of rum, wine, or French brandy, sixty cents; on every hogshead containing other liquids, thirty cents; on all barrels and casks containing spirits, wine and other liquids, in proportion to quality and quantity as above; on every barrel of flour, six cents; on every barrel of pork, beef or fish, ten cents; on every ton of pig iron, forty cents; on every ton of hemp, flax, bar iron, castings, lead, zinc, fifty cents; on every ton of shucks, straw, hay, fodder, or sheaf oats, eight cents; on every ton of stone, manure, bricks, plaister, lime, oyster shells or sand, five cents; on every sack of salt, four cents; on every bushel of wheat, one cent; on every bushel of coal of

five pecks, eight mills; on all other articles commonly sold by the bushel, one cent; on every cord of wood or bark, four cents; on every thousand staves, heading, shingles, boards or bolts, eight cents; on every thousand laths or hoop poles, five cents; on every thousand feet of plank or scantling, twelve cents; on all articles packed in trunks, boxes or bales, ten cents per hundred pounds; all articles not enumerated, packed in hogsheads or barrels, five cents per hundred pounds; each empty boat or batteau, twenty-five cents.

2. *And be it further enacted*, That it shall be the duty of the Collector of Tolls upon the said canal, to demand and receive the following toll or rates, for passing the bridge across the river, on the line of the Blue Ridge Canal, that is to say: For every person, six and one fourth cents; for every horse, mare, mule or ox, six and one fourth cents; for every horse and rider, twelve and half cents; for every two wheel riding carriage, twelve and half cents; for every four wheel riding carriage, twenty-five cents; for every waggon, twenty-five cents; for every cart, twelve and half cents; for every score of sheep, hogs, goats or lambs, twelve and half cents; and so in proportion for any greater or lesser number; for every head of neat cattle, three cents, and no more: *Provided, however*, That nothing herein contained shall be so construed as to authorise the collection of tolls for passing the bridge, from persons engaged in navigating boats on the canal, nor from persons riding in carriages which may pass the said bridge.

3. *And be it further enacted*, That hereafter the Commissioner of the Kanawha Road and Navigation, shall have the same power, and perform the same duties, in relation to the appointment and superintendence of the Collector of Tolls on the said mountain section of canal, bridge and tow-path, as he is now by law authorised and required to do and perform, in relation to the Collectors of Tolls on the said Kanawha Road.

And whereas there exists no longer any reason for requiring the said Commissioner to give bond and security separately in the sum of forty thousand dollars, for his faithful services as Commissioner as aforesaid:

4. *Be it therefore further enacted*, That the said Commissioner shall be required in future to give bond and security as now required by law, for faithfully and punctually discharging his duties as Collector of Tolls on the said road, in the sum of forty thousand dollars: *Provided nevertheless*, That the condition of his said bond shall be so varied and extended as to include the faithful and diligent performance of his duties as

Superintendent of the said road and navigation, and as Collector of Tolls on the said mountain section of canal.

5. All Acts and parts of Acts coming within the purview of this Act, are hereby repealed.

6. This Act shall be in force from the passing thereof.

* * *

AN ACT,

To amend the Act, entitled, "an Act authorising the Board of Public Works to subscribe for a part of the stock of the Ashby's Gap Turnpike Company."

(Passed February 13th, 1827.)

1. *Be it enacted by the General Assembly,* That the President and Directors of the Board of Public Works, shall be, and they are hereby declared to be entitled, on behalf of the Fund for Internal Improvement, to participate in all dividends on stock subscribed to the Ashby's Gap Turnpike Company, from the time when the different instalments shall be paid.

2. This Act shall be in force from the passing thereof.

* * *

AN ACT,

Authorising the Board of Public Works to subscribe in behalf of the State, to the Lower Appomattox Company.

(Passed February 24th, 1827.)

1. *Be it enacted by the General Assembly,* That the Board of Public Works be, and they are hereby authorised and required to subscribe, in trust for the Commonwealth, for one hundred and sixty shares of the stock of the Lower Appomattox Company, payable in semi-annual instalments of four thousand dollars each, commencing on the fifteenth day of July, in the year one thousand eight hundred and twenty-nine: *Provided,* That the conditions of the third section of the Act, entitled, "an Act to amend an Act, entitled, 'an Act creating a Fund for Internal Improvement," passed on the fourth day of March, one thousand eight hundred and nineteen, be complied with on the part of the subscribers for three-fifths of said stock: *And provided,* That the Fund for Internal Improvement shall participate in all dividends which may be declared

in the said company, in the proportion of the several payments made from the Fund, to the whole amount of capital: *And provided also*, That the Board of Public Works shall have the appointment of two out of seven of the directors of the said company, after the first of January, one thousand eight hundred and thirty.

2. This Act shall be in force from the passing thereof.

◆

AN ACT,

Concerning the Richmond Dock Company.

(Passed February 14th, 1827.)

1. *Be it enacted by the General Assembly*, That so much of all and every Act or Acts, as requires the Richmond Dock Company to construct a lock or locks, above *Mayo's* Bridge, shall be, and the same is hereby repealed, but it *shall* nevertheless be lawful for the said company to demand and receive the tolls prescribed by law, on all vessels, boats, and other things subjected to the payment of tolls, passing in or out of the lower lock at Rocketts: *Provided nevertheless*, That nothing herein contained shall be so construed as to put it out of the power of the Legislature to repeal this Act, or to amend the same from time to time, so as to compel the said Dock Company to execute all the provisions of their original charter, as effectually as if this Act had not been passed.

2. This Act shall be in force from the passing thereof.

(See Act of 28th February, 1829, amending the several Acts concerning the Richmond Dock Company.)

◆

AN ACT,

For raising a sum of money by way of lottery, for th benefit of the Richmond Dock.

(Passed March 6th, 1827.)

This Act authorises Commissioners therein named, to rais the sum of $50,000 by lottery, to be appropriated toward completing the Richmond Dock.

AN ACT,

To raise a sum of money by lottery, to connect the Staunton and James River Turnpike with the Kanawha Road, at or near its eastern termination.

(Passed March 9th, 1827.)

This Act authorises Commissioners therein named, to raise $ 50,000 by lottery, to be appropriated to the construction of a road from the western termination of the Staunton and James River Turnpike, to the State road between the waters of the James and Kanawha Rivers.

◆

AN ACT,

To confirm a Law passed at the present Session of the General Assembly of Maryland, entitled, "an Act to incorporate the Baltimore and Ohio Rail Road Company."

(Passed March 8th, 1827.)

This Act confirms, with certain exceptions, the Act of Maryland.

◆

AN ACT,

To repeal the Act, entitled, "an Act concerning the State Road from the upper navigation of James River, to the upper navigation of Kanawha," passed January 17th, 1810.

(Passed February 14th, 1827.)

The Act repealed, related to the keeping in repair and collecting tolls on the old State road, from the mouth of Dunlap's Creek to the Falls of the Kanawha.

◆

AN ACT,

To incorporate the North Western Road Company.

(Passed February 27th, 1827.)

1. *Be it enacted by the General Assembly of Virginia,* That books shall be opened at the town of Winchester, in Fre-

derick county, under the direction of Josiah Lockhart, William Wood, George S. Lane, Abraham Miller, and Charles Brent, or any two of them; at Romney, in Hampshire county, under the direction of William Naylor, William Donaldson, John M'Dowell, Robert Sherrard, and Thomas Slane, or any two of them; at Moorfield, in Hardy county, under the direction of Isaac Van Meter, Daniel M'Neil, Benjamin Fawcett, Samuel M'Machen, and John G. Harness, or any two of them; at Beverley, in Randolph county, under the direction of Eli Butcher, Squire Bosworth, Jonas Crane, Andrew Crawford, and William Cooper, or any two of them; at Kingwood, in Preston county, under the direction of William Sigler, William Johnson, William Price, Charles Byrne, and Thomas Brown, or any two of them; at Pruntytown, in Harrison county, under the direction of Abraham Smith, Frederick Burdett, Thomas Gethrop, Cornelius Reynolds, and Stephen Neill, or any two of them; at Clarksburg, in Harrison county, under the direction of John L. Sehon, John Sommerville, John Webster, Jacob Stealey, and Phineas Chapin, or any two of them; and at Parkersburg, in Wood county, under the direction of Jonas Beason, Joseph Tomlinson, Tillinghast Cook, James H. Neal, and Abraham Samuels, or any two of them, for the purpose of receiving subscriptions to a capital stock of seventy-five thousand dollars, in shares of twenty dollars, to be appropriated to the making of a road from Winchester to some proper place on the Ohio river, between the mouths of Muskingham and Little Kanawha rivers, according to the provisions of this Act.

2. After the sum of fifteen thousand dollars, or more, of the said stock shall have been taken by individuals, in shares as aforesaid, the subscribers thereof, or their executors or administrators, shall have power to meet, either in person or by proxy, at Kingwood, in the county of Preston, and adjourn from day to day, or to any distant day or place; and if it shall appear at any such meeting, that subscribers holding a majority of the shares of the stock, are present in person, or by proxy, and that the said sum of fifteen thousand dollars, or more, has been subscribed by responsible persons, (which shall be adjudged of by the stockholders, or their executors or administrators, in person or by proxy, each having one vote, and no more, and such as shall not be so adjudged shall be struck from the books,) they shall organize a company, by the appointment of ten Directors, who shall appoint a President from their own body, and the President and Directors shall appoint a Clerk

and Treasurer, and from time to time, such other officers as they shall think necessary, who shall hold their offices one year from and after their respective appointments; which shall be the term for all future appointments: And if from any cause no appointments shall be made in any year, the President, Directors, Clerk and Treasurer shall continue in office by virtue of their last appointments, until subsequent appointments be made: And in all appointments for Directors, each stockholder may vote either in person or by proxy, and shall have one vote for every share of stock he shall own.

3. The proceedings of the first general meeting of the stockholders, shall be preserved with subsequent proceedings of the company, all of which shall be entered of record in well bound books to be kept for that purpose: And from and after the first appointment of Directors, the said responsible subscribers, their heirs and assigns, shall be, and they are hereby declared to be, a body politic and corporate, by the name of "The North-Western Road Company;" and by that name may sue and be sued, plead and be impleaded, in any Court of Law or Equity; they shall have and use a common seal; and the President and Directors shall have power to enact all by-laws, rules and regulations, not contrary to the Laws of the land, which they shall think to be necessary for the good government of their company, and the proper transaction of business, and to repeal, annul or alter the same, at their own discretion. The stockholders shall have a general meeting once in every year, at such time as shall be fixed upon by themselves, or any majority of them, (each stockholder having one vote,) for the purpose of appointing Directors, and for the examination of all the accounts and business of the company. A majority of the Directors shall be sufficient to form a quorum to do business; and in the absence of the President, at any meeting, a quorum of the Directors being present, may appoint a President pro tempore, and proceed to business in the same manner as if the President were present. The said President and Directors shall have power to enforce any of their by laws, by fines not exceeding ten dollars for any one infraction, to be recovered before any Justice of the Peace having jurisdiction thereof. If the whole of the capital stock aforesaid be not subscribed at the first general meeting of the stockholders, it shall be the duty of the President and Directors to keep the books open for the reception of stock, until the said sum of seventy-five thousand dollars shall be subscribed by such responsible persons as the said President and Directors shall re-

ceive and admit as stockholders: And at any time after the said company shall have been organized as aforesaid, and the stock therein secured according to law, it shall be lawful for the Board of Public Works, from time to time, to subscribe on the part of the State, for such number of shares, not taken by individuals, (if there be any such.) as they may think expedient, and to pay the same, or such portions thereof, into the funds of the company, as shall be required from time to time; so that they shall at no time subscribe more than two-fifths of the amount actually subscribed and secured by individuals, as aforesaid: And forever after the said Board shall have subscribed two-fifths of the amount actually subscribed and secured by individuals, they shall have power to appoint, on the part of the State, four of the Directors aforesaid; and the said individual stockholders shall appoint the remaining six Directors, in manner aforesaid.

4. It shall be the duty of the Principal Engineer of the State, as soon as existing engagements will permit, to prescribe such plans or schemes for making the whole road, or the several parts or sections thereof, as he shall think best calculated to further its most proper and speedy completion, and to locate and graduate the same, or part or parts thereof, from time to time, make estimates of the probable cost of making each five miles, (or any shorter sections,) so located and graduated, and to make report thereof to the Board of Public Works, at such time or times as shall be convenient.

5. The said President and Directors shall, from time to time, make all contracts necessary for the completion of the said road, and require from subscribers equal advances and payments on their shares, and they shall have power to compel payments, by the sale of delinquent shares, in such manner as shall be prescribed by their by-laws, and transfer the same to purchasers: *Provided*, That if any subscriber shall at any time be a contractor for making any part of the said road, or in any other manner become a creditor of the company, he shall be entitled to a proper set-off in the payment of his stock, or any requisition made thereon.

6. The duty and powers of the President and Directors, the mode of levying tolls, and other provisions which do not conflict with the provisions of this Act, shall conform in all respects to the Act, entitled, "An Act prescribing certain general regulations for the incorporation of Turnpike Companies," passed the seventh day of February, eighteen hundred and seventeen.

7. All Acts and parts of Acts, coming within the purview of this Act, are hereby repealed.

8. This Act shall be in force from the passing thereof.

AN ACT,

Incorporating a Company to construct a Turnpike Road across the Warm Spring Mountain.

(Passed March 8th, 1827.)

This Act incorporates the "Warm Spring Mountain Turnpike Company," with a capital of 3,600 dollars. The road to be eighteen feet over the mountain, and twenty-two feet in other parts; and directs "that the said road shall be made according to the location and direction of the Principal Engineer of the State."

AN ACT,

To amend the Act, entitled, "An Act to create a Fund for Internal Improvement."

(Passed February 20th, 1828.)

1. *Be it enacted by the General Assembly,* That so much of the twelfth section of the Act, entitled, "An Act to create a Fund for Internal Improvement," as provides that the dividends on the stock which may be subscribed by the President and Directors of the Board of Public Works, shall go exclusively to other subscribers than the Commonwealth, until such portion of the stock of those subscribers, as shall have been actually paid in, shall have netted to them six per cent. per annum, from the specified time of such payment, shall be, and the same is hereby repealed; and all dividends upon subscriptions hereafter authorised or required to be made by the General Assembly, to any Canal, Road, Bridge Company, or other Corporation, shall be made and stand upon the same footing with subscriptions made by individuals.

2. This Act shall be in force from the passing thereof.

AN ACT,

Concerning the Kanawha Road and Navigation.

(Passed March 1st, 1828.)

1. *Be it enacted by the General Assembly*, That so much of any Act or Acts now in force, as vests in the Commissioner of the Kanawha Road and Navigation, the power of appointing lock-keepers and toll-gatherers on the canal through the Blue Ridge, shall be, and the same is hereby repealed; and the same powers shall be, and are hereby vested in the President and Directors of the James River Company.

2. *Be it further enacted*, That hereafter it shall not be lawful to appoint a Commissioner or Engineer for the Kanawha Road and Navigation, as heretofore: *Provided*, That the President and Directors of the James River Company shall have full power and authority to appoint an Agent, to prescribe his duties, and the manner in which he shall discharge the same; to take from him a bond, with such security as they may prescribe, conditioned for the faithful and punctual discharge of his duties, as prescribed by them, together with any other condition which they may deem expedient. He shall superintend, as far as he may be required, the mountain section of the James River Canal, the Kanawha Road and Navigation, the receipt of tolls, repairs and completion of the works, and in all things be governed by the instructions and requisitions of the said President and Directors of the James River Company, and shall receive for his services such compensation as shall be deemed reasonable by the President and Directors of the James River Company, not exceeding eight hundred dollars per annum, to be paid quarter-yearly, out of the tolls received upon the said improvements.

3. This Act shall be in force from and after the passing thereof.

* * *

AN ACT,

Concerning the Kanawha Turnpike Road.

(Passed February 16th, 1828.)

1. *Be it enacted by the General Assembly*, That the following tolls shall be demanded and collected at the bridges or ferries across Gauley or Greenbrier River, on the Kanawha Turnpike Road, in lieu of the tolls heretofore imposed by law.

to wit: For every person on foot, in a carriage, or on horseback, six and one-fourth cents; for every riding horse, twelve and one-half cents; for every four wheel riding carriage, drawn by four horses, fifty cents; for every four-wheel riding carriage, drawn by two horses, thirty-seven and one-half cents; for every two-wheel riding carriage drawn by two horses, thirty-seven and one-half cents; for every two-wheel riding carriage, drawn by one horse, twenty-five cents; for every carryall, on every animal drawing the same, eighteen and three quarter cents; for every travelling stage, on every animal drawing the same, twelve and one-half cents; for every animal drawing in waggons, carts, et cetera, eighteen and three quarter cents; for every horse, mare, mule or gelding, not rode, six and one-fourth cents; for every score of cattle, twenty-five cents; for every score of sheep or hogs, six and one-fourth cents.

2. *And be it further enacted,* That it shall be lawful for the toll-gatherer, under the direction of the Commissioner, to make contracts by the year with all persons residing within four miles of any toll-gate on said road, and also with mail-contractors, payable quarterly: *Provided, however,* That no contract shall be made by which less toll shall be paid by any mail-contractor, than is now prescribed by law.

3. *And be it further enacted,* That it shall be the duty of the Commissioner on the Kanawha Road, to establish one additional toll-gate at some convenient place between John M'Clung's and the Dogwood Gap, and there demand and collect the same rates of tolls as are collected at the other gates on the said road.

4. This Act shall be in force from the passing thereof.

AN ACT,

Reducing the Tolls on the Kanawha River.

(Passed March 1st, 1828.)

1. *Be it enacted by the General Assembly,* That the fifth section of the Act to amend the Act, entitled, "An Act for clearing and improving the navigation of James River, and for uniting the eastern and western waters, by the James and Kanawha Rivers," shall be, and the same is hereby repealed, and the tolls hereafter to be demanded and received, upon boats

and commodities passing on the Kanawha River, shall be at the following rates, that is to say: On salt, wheat, peas, beans, dried fruit, flax or hemp seed, one cent per bushel; on bacon, four cents per hundred weight; on every barrel of cider, beer, pork, beef or pickles, ten cents; on every cask of linseed or other oil, twelve and a half cents; on every bushel of Indian corn, potatoes, apples or corn meal, one half cent; on every barrel of flour, four cents; on every ton of hemp, *potash*, bar or manufactured iron, seventy-five cents; on every ton *of pig* iron or castings, twenty-five cents; on coal, twelve and a half cents per chaldron; on hoop poles, barrel staves and heading, five cents per thousand; on plank and scantling, one and a half cents per hundred cubic feet; on all other timber, three cents per hundred cubic feet; on hogshead and pipe staves, one cent per hundred; on every score of empty barrels, two cents; on wine, rum, brandy, and other foreign liquors, one *cent and a half* per gallon; on whiskey, apple or peach brandy, *twenty cents* per barrel; on lard, cheese, butter and tallow, six and a fourth *cents* per hundred weight; on cordage, one cent per hundred weight; on salt fish, twelve and a half cents per barrel; on sugar, five cents per hundred weight; on coffee, six and one-fourth cents per hundred weight; on nails, five cents per hundred weight; on dry goods, packed in bales, boxes, or trunks, twelve and a half cents per hundred weight; on all articles not above enumerated, five cents per hundred weight; on every boat not having commodities on board yielding a toll of one dollar, seventy-five cents: *Provided,* That all return boats, which have already paid toll, shall pass toll-free: *And provided further,* That all canoes going to or returning from mill, shall be exempted from the payment of toll.

2. *Be it further enacted,* That all that part of the Kanawha River, with all its shores, bays and inlets, lying and being between the north side of Elk River, and the south side of Slaughter's Creek, at their confluence with the Kanawha, and passing in a direct line across said river, at the aforesaid points, shall form a collection district, to be called the district of Charleston; an office for which shall be kept at Charleston, in said district. And all boats arriving at or departing from said district, shall file with the Receiver of Tolls a manifesto of the cargo, made out upon oath, if required by the said Receiver, and shall pay the tolls required by this Act, and receive a receipt therefor; and all boats or river craft failing to comply with the provisions of this Act, shall be subject to be seized and held until the said tolls are paid.

AN ACT,

To amend the Act, entitled, "An Act for opening, extending and improving the navigation of the River Rappahannock, and its improvable branches."

(Passed January 21st, 1828.)

1. *Be it enacted by the General Assembly,* That in furtherance of the provisions of an Act passed on the seventh day of March, in the year one thousand eight hundred and twenty-six, entitled, "An Act to revive and amend an Act, entitled, 'An Act for opening, extending and improving the navigation of the River Rappahannock, and all its improvable branches,'" passed on the ninth day of February, in the year one thousand eight hundred and eleven, it shall be lawful for the managers named in the said Act for opening books and receiving subscriptions, to cause books to be opened on the fifteenth day of February, in the year one thousand eight hundred and twenty-eight, and continue the same open till the first day of January, in the year one thousand eight hundred and twenty-nine, for the purpose of receiving and entering subscriptions to the amount of $50,000, in order to open, improve and extend the navigation from Fox's mill, in Fauquier, to tide-water, or to a convenient basin within eight hundred yards of tide-water; and so soon as there shall be subscribed the sum of thirty thousand dollars, it shall be lawful for the managers, or any three of them, to call a meeting of the subscribers, at Fredericksburg, by giving notice thereof in some public newspaper of that town, at which meeting proceedings shall be had according to the provisions referred to in said Act.

2. *Be it further enacted,* That the authority to subscribe for a part of the capital stock of the said company, which was given to the Board of Public Works, by the Act passed on the seventh of February, eighteen hundred and seventeen, entitled, "An Act authorising the Board of Public Works to subscribe for a part of the stock of the Rappahannock Company, and for other purposes," shall be, and the same is hereby revived: *Provided nevertheless,* That such subscription, when made, shall be on the terms and conditions prescribed by the Act, entitled, "An Act to create a Fund for Internal Improvement," and the several Laws amendatory of the same: *And provided moreover,* That the shares which may be subscribed from the Fund for Internal Improvement, in the stock of the said company, shall stand on the same footing as to dividends, with the stock of the other stockholders.

loaners of the said money, certificates in the same form, transferable in the same manner, and redeemable at the same periods, with those which have been heretofore authorised and employed in the negotiations of the last loans obtained by the State for the purposes of internal improvement: and that the tolls hereafter raised upon the Kanawha Turnpike Road, heretofore finished, as well as the tolls which may arise from the road hereby authorised to be made, after keeping the said road in repair, shall be, and the same are hereby pledged for the payment of the interest which may accrue on the money to be borrowed under the authority of this Act, and for the final redemption of the stock which may be created under the provisions herein contained; and if the tolls shall be found inadequate to the payment of the said semi-annual interest, then, such deficiency shall be paid out of any monies belonging to the Fund of Internal Improvement.

2. *Be it further enacted*, That the Principal Engineer, as soon as may be after the passage of this Act, shall proceed to lay out and locate the said road from the western termination of the said Kanawha Turnpike Road, to the mouth of Big Sandy River, of the same width of location, and of construction with the best parts of the road heretofore made: In the performance of which duty, he is hereby required to graduate the same as near a horizontal line as the inequalities of the ground may admit of, but so that the said road when formed shall in no instance diverge more than five degrees from a horizontal line: That in making such location he shall so mark his stations and levels, and indicate the sites of the bridges and culverts which he may deem necessary, that the Superintendents of the work with the aid of his field notes, may be readily enabled to execute the same, according to the designs and plans of the said Principal Engineer.

3. *Be it further enacted*, That the Principal Engineer shall, in locating the said road, and in his report thereof, carefully estimate and describe the quantity and kind of labour to be done on each mile thereof, and the reasonable cost of the same. He shall also describe the number, kind and situation of the bridges, culverts and drains which he may deem necessary, accompanying his descriptions with profiles or drawings, when he may deem the same useful; so that such report may form the basis of contracts for the execution of the entire work. And it shall be the further duty of the said Engineer, to deliver to the Clerks of the County Courts of Kanawha and Cabell counties, plats or maps of so much of the said road as may be

within their respective counties, to be by them *respectively* recorded, and thereupon the land over which the said road shall be located, shall become, ipso facto, vested in the Commonwealth for the use of the said road.

4. *Be it further enacted,* That if any person shall conceive himself, herself, or themselves, aggrieved by the location of the said road, and the investment of the land in the Commonwealth, over which the same shall pass, or by the erection of any bridges, abutments or other necessary work *or building,* in the formation and construction of the said road, it *shall be* lawful for such person or persons, within one year from the recording of the maps or plats as herein provided for, to file a suggestion before the Superior or County Court of the county where such land may be situated, setting out the grounds of the injury complained of, and for which damages are *claimed,* of which suggestion the person complaining shall give to the President of the James River Company at *least thirty* days notice, by serving him with a copy thereof; *whereupon,* the Court before whom the suggestion may be filed, shall cause *an* issue to be made up and tried at the bar of the said Court, as other issues of fact are tried, for ascertaining what damages the complainant hath sustained by reason of the matters alleged in his suggestion, over and above the advantages and benefits accruing to the complainant, by the opening and constructing the said road. And upon the certificate of the Court trying such issue, the President and Directors of the James River Company shall pay the amount of the damages which may be so found, to the party appearing by said verdict to be entitled to the same, out of any unexpended funds in their *hands; but* all persons failing to file suggestions as herein provided, for the space of one year from the time at which such maps or plats shall be delivered for recording, shall be held and deemed to have relinquished to the Commonwealth all claim to damages arising or supposed to arise from the execution of this Act.

5. *Be it further enacted,* That the President and Directors of the James River Company, by themselves, their agents and servants, and the Principal Engineer, with the surveyors and assistants, shall have full power and authority to enter upon all lands and tenements through which they may think it necessary to make examinations, and to lay out the said road as the Principal Engineer may judge most for the public advantage and benefit. And in the opening and constructing the said road, the President and Directors of the James River Company, their agents and servants, shall have the same power

and authority, and be subject to the same limitations and restrictions as are provided in the twelfth and thirteenth sections of the "Act prescribing certain general regulations for the incorporation of Turnpike Companies," passed February the seventeenth, in the year eighteen hundred and seventeen.

6. *Be it further enacted*, That the President and Directors of the James River Company be, and they are hereby authorised to select and appoint an able, capable, discreet Superintendent of the road hereby directed to be made, and to allow him such salary as they may judge reasonable, not exceeding seven hundred and fifty dollars per annum. It shall be the duty of the said Superintendent to make all contracts for the opening and constructing the said road, erecting bridges, and whatever else may be necessary for the fully finishing and completing the same, under the direction of the said President and Directors, and subject to their approbation and ratification. It shall also be his duty strictly and constantly to superintend the execution of all the works upon the said road, and perform such other duties as the President and Directors of the James River Company may from time to time appoint and direct; and the said President and Directors shall have full power and authority to remove from office, for any cause by them deemed sufficient, any Superintendent by them appointed, and to appoint another in his place.

7. *Be it further enacted*, That as soon as a section of fifteen miles of the said road shall be completed, and as often as sections of that length shall be finished, it shall be lawful for the President and Directors of the James River Company to cause a gate or gates to be erected across the said road; to appoint Receivers of Tolls at said gates, and to exact and receive for the use of the said road, the same rates of toll as are now paid for the use of an equal distance of the Kanawha Turnpike. And all the laws and regulations heretofore enacted in relation to the Kanawha Turnpike, shall be held and taken as equally applying to the extension hereby directed to be made, so far as the same remains unchanged by the provisions of this Act.

8. *Be it further enacted*, That it shall be the duty of the owners and proprietors of the ferries over water-courses on the line which may be selected for the road, to graduate the banks to the angle hereby prescribed, and by permanent and sufficient wharfing to secure the same from abrasions, of such width, and in such manner and time, as the Principal Engineer shall prescribe, and at all times shall keep the same so covered with stone or gravel, when necessary, as to render the

approach to the ferry-boat firm and dry; and every keeper or owner of a ferry over which the said road may pass, who shall fail to comply with any of the requisitions of this Act, shall be subject to a fine of not less than twenty dollars, nor more than one hundred dollars, to be recovered by indictment or information, in any Court having jurisdiction thereof, for the use of the President and Directors of the James River Company; but nothing in this section contained, shall be so construed as to prevent the President and Directors of the James River Company from erecting bridges at any time hereafter over such water-courses, reserving to the owners or proprietors of such ferries, all the rights and remedies given to the owners and proprietors of the land over which the road may be made

9. This Act shall commence and be in force from and after the passing thereof.

* * *

AN ACT,

Concerning the Kanawha Road and Bridges, and for other purposes.

(Passed February 28th, 1829.)

1. *Be it enacted by the General Assembly,* That persons going to and returning from mill, for the purpose of procuring meal for the consumption of families, shall hereafter be exempt from the payment of tolls on the Kanawha Turnpike Road and Bridges, and the collectors or receivers of tolls, inspectors of boats, lock-gate keepers, and overseers employed by the James River Company, on the several improvements under their direction, shall also be exempt from the performance of militia duty in time of peace.

2. *Be it further enacted,* That so much of the Act passed on the sixteenth day of February, one thousand eight hundred and twenty-eight, concerning the Kanawha Turnpike Road, as directs an additional toll-gate to be established between John M'Clung's and the Dogwood Gap, be, and the same is hereby repealed, and that so much of the Act, entitled, "An Act concerning the Kanawha Turnpike Road," passed February the sixteenth, in the year one thousand eight hundred and twenty-eight, as imposes tolls at the Greenbrier Bridge, is hereby repealed, and that the following rates of tolls shall be

demanded and paid at the said bridge, that is to say: For every score of sheep or hogs, six and a fourth cents; for every score of cattle, twenty cents, and so in proportion for a greater or lesser number; for every horse, mare, mule or gelding, six and a quarter cents; for every man and horse, twelve and a half cents; for every four-wheeled riding carriage, drawn by four horses, thirty-seven and a half cents; for every four-wheeled riding carriage, drawn by two horses, thirty-one and a quarter cents; for every two wheeled riding carriage, eighteen and three quarter cents; for every cart or waggon, for every animal drawing the same, twelve and a half cents; for every carryall drawn by two horses, eighteen and three quarter cents; for every carryall drawn by one horse, twelve and a half cents; for every person on foot, six and a quarter cents.

3. *Be it further enacted*, That the President and Directors of the James River Company shall hereafter have and exercise the power of determining and prescribing the amount of the penalties of the bonds to be executed by the receivers or collectors of tolls on the Blue Ridge Canal, the Kanawha Road, and the Kanawha River, and of changing the location of the toll-gates authorised to be erected on the Kanawha Road, whenever, in their opinion, the interests of the company would be promoted by such change.

4. *Be it further enacted*, That for the purpose of discharging the unsatisfied demands against the company, for the construction of the public improvements under their direction, it shall be lawful for the President and Directors of the James River Company, and they are hereby authorised and required, to borrow a sum not exceeding ten thousand dollars, on the same terms and conditions, and on the same pledges, as are specified for the loan authorised by the Act passed on the first day of March, one thousand eight hundred and twenty-six, entitled, "An Act authorising a loan for the purposes of internal improvements," which sum, or any part thereof which may be borrowed, is hereby appropriated to the discharge of the demands aforesaid.

And whereas, the obligations imposed by law on the President and Directors of the James River Company, of erecting and keeping in repair the farm bridges and fencing rendered necessary by the construction of the James River Canal, is found to be injurious to the public interest, and inconvenient in its execution:

5. *Be it therefore enacted*, That if the President and Directors of the James River Company cannot agree with the

oprietors of the lands on which the said bridges and fences
ve been erected and provided, as to the amount of the com-
nsation which the said proprietors would be entitled to, for
onerating the James River Company forever from the obli-
tion aforesaid, it shall be lawful for the said President and
irectors to apply to the Superior Court of Law of Henrico
ounty to appoint, and upon such application it shall be the
ity of the said Court to appoint five discreet, intelligent, dis-
terested and impartial freeholders, to value and assess the
mpensation or damages which will accrue to the said pro-
ietors by reason of the said exoneration. It shall be the
ity of the said freeholders, (any three of whom may act,) to
semble at any point they may agree on, and proceed to an
amination of the farm bridges and fences on the line of the
nal between Richmond and Maiden's Adventure, which the
id company are bound to keep in repair, and respecting
hich a compromise cannot be effected, and after viewing the
me, and hearing such proper evidence as either party may
fer, they shall ascertain the amount of the compensation
hich such proprietors will be entitled to, in consequence of
e said exoneration. And when they shall have agreed on
e amount of the said compensation, they shall make a writ-
n report of their proceedings, and return the same to the
perior Court of Law aforesaid, sworn to in the manner di-
cted in the nineteenth section of the General Law concern-
g Turnpike Companies. If the said freeholders should dis-
ree, and report their disagreement, or if from any cause
ey should fail to make a report within a reasonable time after
eir appointment, the Court may at its discretion, as often as
ay be necessary, supersede them, or any of them, and ap-
int others in their stead, and direct report to be made as be-
re prescribed. And on the return of the report or reports
the Commissioners aforesaid, the President and Directors
the James River Company shall pay the amount of the com-
nsation or damages allowed thereby, to the respective pro-
ietors of the lands aforesaid, unless the amount assessed to
y proprietor or proprietors should be deemed by them un-
asonable and excessive, in which case they shall not be held
so much of the said report, but shall be bound to keep the
id bridges and fences of such proprietor or proprietors in re-
ir, as required by existing laws. In consideration of the
uble hereby imposed on the said Commissioners, and the
pense incurred by them in the performance of the duties re-
ired of them, they shall be allowed each the sum of two

dollars per day for every day's attendance, when they shall attend and proceed to business, payable by the President and Directors of the James River Company.

6. *Be it further enacted*, That the portion of the salaries of the Second Auditor and his Clerk, which have heretofore been payable out of the fund raised to effect improvements under the direction of the James River Company, shall in future be paid out of the receipts from tolls, and other profits of the said company.

7. This Act shall be in force from the passing thereof.

AN ACT,

Prescribing a Tariff of Tolls on the Kanawha River, and for other purposes.

(Passed February 27th, 1829.)

1. *Be it enacted by the General Assembly*, That the tolls to be demanded and received upon boats and commodities passing on the Kanawha River, shall be at the following rates, that is to say: On every bushel of salt of fifty pounds weight, one half of a cent; and on all other articles as fixed by an Act, entitled, "An Act reducing the tolls on the Kanawha River," passed March 1st, 1828: *Provided*, That all return boats which have already paid toll, shall pass toll free: *And provided further*, That all canoes going to, or returning from mill, shall be exempted from the payment of tolls.

2. *Be it enacted*, That the collection district of Charleston shall be, and the same is hereby enlarged and extended from its present lower boundary to the mouth of the Kanawha River, including all the shores, bays and inlets of the said river within that distance.

3. *Be it further enacted*, That manifests of the cargoes of all boats or other vessels arriving at or departing from the said district, made out upon oath if required by the receiver of tolls for the said district, shall be filed with the said receiver, designating also the names of the said cargoes, of the owners and masters of the boats or other vessels in which the said cargoes shall be shipped, and of the said boats or vessels, together with that of the shippers and other agents having the controul or direction of the said cargoes: and the legal tolls shall be demandable and payable to the collector of tolls according-

ly, and in all cases of failure to comply with the regulations hereby established, and to pay the tolls aforesaid, it shall be the duty of the said collector to seize and hold the boats or other vessels concerned in the neglect or evasion thereof, until the Law is fully complied with; and if that be not done within the space of two days from the time of such seizure, it shall be lawful for the said collector of tolls, and he is hereby required, after giving five days previous notice of his intention, by advertisement at the door of the Court-house of the County of Kanawha, to sell at public auction for ready money, so much of the said cargoes of such boats or vessels, as will be sufficient to pay the tolls due, with an addition of fifty per cent. thereon, and the necessary expenses incurred by the said collector in seizing, securing and taking care of the said vessels and cargoes, and the said boats or vessels, with the remaining cargoes, and any balances of money which may remain from the sales aforesaid, after satisfying the above-mentioned tolls, damages and charges, shall then be paid to the lawful owners or proprietors thereof, or to their agents.

4. *Be it further enacted*, That the receiver of tolls for the district aforesaid, shall be, and he is hereby authorised and empowered to board and enter all boats or other vessels in the said river, whether in the stream or at anchor, or at the landings on either shore of the Kanawha River, or the bays or inlets thereof, within the limits of the collection district, as enlarged by this Act, and to demand and receive the legal tolls on all the commodities contained in the said boats or vessels, whether fully or in part loaded; and in case of failure to pay the said tolls when thus demanded, the said boats or vessels, and the cargoes thereof, shall be liable to seizure, sale and disposition, in all respects as is prescribed in the foregoing section of this Act: And all and every person or persons on board of any boat or other vessel ascending or descending the said river, refusing or neglecting to come to when required by the said collector to do so, shall forfeit and pay twenty dollars to the use of the James River Company, to be recovered before any Justice of the Peace; and all persons resisting the said receiver in the execution of any powers given to him by this Act, or any previous Act not repealed by this Act, shall be deemed guilty of a misdemeanor, and be prosecuted accordingly.

5. *Be it further enacted*, That this Law shall be given in charge to the Grand Juries of the Superior Courts of Law for Kanawha and Mason counties; and whenever a presentment

or indictment authorised by this Act, shall be made by a Grand Jury, the Court wherein the same shall be made, shall immediately order a capias to issue, directed to the Sheriff or other proper officer of any county or corporation within this Commonwealth, where the defendant or defendants may be found.

6. *Be it further enacted*, That the President and Directors of the James River Company be, and they are hereby authorised to appoint one fit and proper person, or more if they shall deem it necessary, to assist the receiver of tolls aforesaid, in the performance of such of his official duties as they may prescribe: And any resistance or failure to conform to the legal acts and requisitions of such assistant or assistants, within the powers conferred on him or them by the said President and Directors, shall be attended with the same penalties and punishments, and to be inflicted in the same way, as in the case of resistance to the receiver of tolls himself.

7. *Be it further enacted*, That all persons, whether principals or agents, who shall ship off, or authorise to be shipped off, any article subject to the payment of tolls, without having first entered the same with the receiver of tolls as herein prescribed, and paid the tolls due thereon, shall forfeit and pay three times the amount of the tolls on the article so shipped off, to be recovered for the use of the James River Company, before any Justice of the Peace.

8. *Be it further enacted*, That the receiver of tolls of the Charleston district shall be, and he is hereby vested with all the powers and rights of the President and Directors of the James River Company to prosecute, in the usual and necessary legal forms and requisitions, in their name and on their behalf, for any penalties, forfeitures or punishments authorised, incurred and sanctioned by this Act.

9. *Be it further enacted*, That it shall be the duty of the President and Directors of the James River Company to cause buoys to be placed in the Great Kanawha River, so as readily and clearly to indicate and point out to navigators all the entrances and lines of the sluices, the wing-dams and the jetties, and generally the course of the channels. The said President and Directors shall also cause beacons to be placed on the bars, rocks and other obstructions to the navigation, not within the sluices or channels, but which, from their positions, or from other causes, are likely to endanger the safety of vessels or boats navigating the said river; which buoys and beacons shall be so constructed as to be visible, until the water of the river shall rise five feet above its ordinary lowest level. For the

greater safety and convenience of the ascending trade of the said river, it shall be the further duty of the said President and Directors to cause large rings to be attached by suitable bolts to rocks or other stable bodies, along the sluices and at the ends of the wing-dams and jetties, for the better enabling the ascending boats to overcome the force of the currents, by warps and cords.

10. *Be it further enacted*, That it shall be the duty of the said President and Directors, to cause all depositions of sand, gravel, timber or other obstructions in the channels, sluices or passages of the said river, to be removed therefrom, so as to restore to the said channels, sluices and passages, the width and depth of water produced therein by the works recently constructed on the said river, and at all times to keep the said channels, sluices and passages, free from depositions or other obstructions which may impair or impede the navigation: *Provided*, That nothing in this Act contained, shall authorise the expenditure of a sum exceeding one thousand dollars.

11. *Be it further enacted*, That it shall be the duty of the Principal Engineer of this Commonwealth, and he is hereby required to attend during some dry season, to view the several improvements made on the said river, and make report on their defects, and the remedies necessary therefor, to the Board of Public Works, at its next session.

12. This Act shall be in force from and after the passing thereof.

AN ACT,

To amend the several Acts concerning the Richmond Dock Company.

(Passed February 28th, 1829.)

1. *Be it enacted by the General Assembly*, That unless the Richmond Dock Company shall at some point below Mayo's Island, at their own expense, construct a lock in the bank of the Dock, of such dimensions as shall be designated by the Principal Engineer of the State, and shall from the lock into the river, make and keep open, at their own expense, at all times, a navigation for all boats which can navigate the James River Canal, when in the order required by law; the said Dock Company shall, at their own expense, construct a lock

in the bank of the Dock, above Mayo's Island, and below the chain of locks leading from the Basin of the James River Company, of such dimensions in all respects, as shall be prescribed by the Principal Engineer of the State, for the safe and easy passage of all boats which can navigate the James River Canal when in the order prescribed by law; which lock and navigation, if made below Mayo's Island, or lock only, if made above the said Island, shall be completed on or before the first day of August, one thousand eight hundred and thirty; and the said Dock Company shall elect which work they will do, on or before the first day of May next, and immediately notify the James River Company thereof: *Provided*, That nothing contained in this Act shall prevent the said Dock Company from exacting and collecting the tolls authorised by its original charter for the use of its works.

2. *Be it further enacted*, That if the Richmond Dock Company shall determine not to make the lock and navigation below Mayo's Island, herein-before mentioned, but to make the lock above Mayo's Island, then and in that event, it shall be the duty of the James River Company to erect a dam from the upper part of Confluence Island, obliquely to the northern abutment of Mayo's Bridge, on the Island herein first above mentioned, and a dam from the upper part of Confluence Island to the Island next above it, both dams to be of sufficient height to afford water deep enough at the lock to be erected by the Richmond Dock Company, above Mayo's Island, to navigate all boats which can navigate the James River Canal, when in the order required by law; and from the southern extremity of the aforesaid dam shall cut a canal through Confluence Island to the nearest point on the south side of that Island, where the water is deep enough in the river for navigation; and in the canal shall construct a lock, of such dimensions, in all respects, as shall be prescribed by the Principal Engineer of the State, for the safe and easy descent and ascent of all boats which can navigate the James River Canal, when in the order required by law; all of which works to be done by the James River Company, shall be executed in all respects in the manner that shall be designated by the Principal Engineer, and shall in all things be completed by the first day of October, one thousand eight hundred and twenty-nine, and the expense thereof shall be defrayed out of the profits of the James River Company.

3. *Be it further enacted*, That it shall be the duty of the said companies respectively, forever hereafter, to keep in a state of good repair all the works which they are hereby re-

scribed for and paid, or secured according to law, by individuals, three-fifths of the sum just mentioned, the same authority shall be, and hereby is vested in the Board of Public Works, at their discretion, to subscribe for the remaining two-fifths, that was given to the said Board, by the Act passed on the 21st day of January, 1828, entitled, "An Act to amend an Act, entitled, 'An Act for opening, extending and improving the navigation of the River Rappahannock, and its improvable branches," to subscribe for the stock contemplated in said Act.

3. *Be it further enacted,* That whenever the works contemplated in the Acts for opening, extending and improving the navigation of the Rappahannock, shall come, or be thought to come, in conflict with the interests and property of individuals, in consequence of which any legal process be resorted to, or any injunction awarded, it shall be the duty of every Court to give precedence to all controversies arising therefrom, and determine the same in preference to all other cases.

4. This Act shall commence and be in force from the passing thereof.

AN ACT,

Concerning the Trustees of Slate River.

(Passed February 26th, 1829.)

Whereas, it is represented to the present General Assembly, that so much of the Act for improving the navigation of Slate River, as requires the owners of mills upon said river to erect and keep in repair good and sufficient locks through their dams, for the free passage of boats navigating the river, has been decided by the Court of Appeals to be void, and not obligatory upon the owners of the mills:

1. *Be it therefore enacted,* That it shall be lawful for the Trustees of Slate River, and their successors, to agree with the several owners of mills upon the said river, and with other persons owning lands opposite the dams of said mills, for the privilege of erecting locks in the said dams, or cutting canals around the abutment of the dams eighteen feet wide, and for erecting locks in the said canals or dams, not exceeding seven feet in width, and of such dimensions in all other respects, as to admit of the free and easy passage of boats navigating the

Trustees, or their successors, or the proprietor or proprietors of any dam, or the owner or owners of any land, should think themselves aggrieved by any assessment of the said juries, such parties may appeal therefrom to the Superior or Inferior Court of Buckingham county, whose judgment between them shall be final.

2. *Be it further enacted,* That upon the erection of any lock in any dam on the said river, it shall be the duty of the said Trustees, and their successors, and they are hereby required to provide and keep in constant attendance at such lock, a competent hand to work the same, who shall be compelled to close said lock immediately after the passage of any boat, so as to prevent any unnecessary waste of water; and on failure thereof, the said Trustees, and their successors, shall forfeit and pay twenty dollars for every twenty-four hours they shall neglect to provide such hand, and the like sum for every failure of such hand to close the said lock, according to the requisitions of this Act.

3. *Be it further enacted,* That if the owners or occupiers of mills on the said river, shall hereafter permit their dams to be in such order and condition, as will occasion such waste of water as to defeat the navigation through the locks erected by the said Trustees, and their successors, it shall and may be lawful for the said Trustees, and their successors, to cause the said dam or dams to be repaired and put into such condition as will furnish the said locks with a sufficient supply of water, the expense whereof shall be defrayed by the said Trustees, and their successors, or by the owner or occupier of such dam or dams, or by both jointly; and for ascertaining the proportion of the said expense to be paid by the said Trustees, and their successors, and that to be paid by the owner or occupier of any such dam or dams, a jury shall be summoned, as directed in the first section of this Act, on application to either of the Trustees, or owners or occupiers of the mills, who shall be charged to enquire what amount of repairs were necessary for working the mill and machinery for which said dam or dams were built, and what necessary for the purposes of navigation, and the apportionment of the costs of the said repairs made by the said jury, shall be paid by the party chargeable therewith, to the person or corporation entitled to the same. But, if either of the said parties should refuse to pay such apportionment, it shall be lawful to recover the same by warrant, if under twenty dollars, or by action of debt.

4. *Be it further enacted,* That so much of the fift section of the Act for improving the navigation of Slate R passed January twenty-ninth, eighteen hundred and ninetee as requires a completion of the navigation in five years, sha be, and the same is hereby repealed, and the said Trustees, a their successors, are hereby reinstated in all their rights und the Act aforesaid.

5. This Act shall commence and be in force *from* and aft its passage.

◆

AN ACT,

To amend the several Acts concerning the Cartersville Bridge Company.

(Passed February 16th, 1829.)

1. *Be it enacted by the General Assembly,* That the Cartersville Bridge Company, in re-building and repairing the toll-bridge across James River, at the town of Cartersville, shall make the said bridge of not less than twelve feet width instead of that required by the "Act to amend the Act, entitled, 'An Act incorporating a company to erect a toll-bridg across James River, at the town of Cartersville.'"

2. *Be it further enacted,* That so much of the eighth section of the "Act incorporating a company to erect a toll-br across James River, at the town of Cartersville," as requ the presence of seven managers, of which the President sh be one, or of nine managers, in the absence of the Presiden to form a Board for the transaction of business, shall be, an the same is hereby repealed; and hereafter five managers sha be sufficient to constitute a Board as aforesaid.

3. This Act shall be in force from and after the passin thereof.

AN ACT,

To amend and explain "An Act to raise a sum of money by lottery, to connect the Staunton and James River Turnpike with the Kanawha Road, at or near its eastern termination," passed March 9th, 1827.

(Passed February 24th, 1829.)

This Act changes some of the regulations in relation to the road, and the drawing of the lottery, &c., and provides:

"3. That the said Commissioners shall be authorised to contract for and commence the construction of said road, whenever they shall deem it expedient, after the same has been located by the Principal Engineer of this State, and his said location approved by a majority of the Commissioners aforesaid; which location shall be made by the said Engineer, so soon as may be convenient, after the said Commissioners shall have informed the ex-officio members of the Board of Public Works of their readiness to proceed to the execution of the work aforesaid: *Provided,* That the said Commissioners shall, in their discretion, be authorised to direct the said road to be located, and contract for its construction, directly from Staunton, by way of the Warm Springs, to the intersection of the Kanawha Road, at or near its eastern termination, or to the eastern termination of the Turnpike Road recently constructed across the Warm Spring Mountain: *And provided also,* That the said road shall not be located farther northwardly than Jennings's Gap."

◆

AN ACT,

To amend an Act, entitled, "An Act to incorporate the Chesterfield Rail Road Company."

(Passed February 25th, 1829.)

This is in fact the Act of incorporation of the Chesterfield Rail-Road Company. The capital stock consists of 100,000 dollars, in shares of 100 dollars, "for the purpose of making a Rail-Road, to run from an intermediate point between the coal-pits of Beverley Randolph and Nicholas Mills, in the county of Chesterfield, to tide-water, opposite Rocketts, in the City of Richmond." When the whole of the said Rail-Road shall be completed "the Company shall be entitled to demand and receive one dollar and fifty cents per ton, as compensation

AN ACT,

To incorporate a company to construct a Turnpike Road from Lexington to Covington.

(Passed February 19th, 1829.)

1. *Be it enacted by the General Assembly*, That it shall be lawful to open books at Lexington, under the direction of William Wilson, John Ruff, William Taylor, Samuel M'Dowel Reid, Andrew Alexander, and Richard Morris, or any three of them; and at Covington, under the direction of Oliver Callihan, Andrew M. Scott, Samuel B. Lowrey, William H. Terrill, John Persinger, and Jesse Davis, or any three of them, for receiving subscriptions to the amount of twenty thousand dollars, for the purpose of making and constructing a turnpike road from the town of Lexington, in the county of Rockbridge, to the town of Covington, in the county of Alleghany. When the said sum shall have been subscribed, in shares of fifty dollars each, the subscribers, their heirs and assigns, shall be, and are hereby incorporated into a company, by the name of "The Lexington and Covington Turnpike Company," agreeably to the Act, entitled, "An Act prescribing certain general regulations for the incorporation of Turnpike Companies:" *Provided*, That the said company shall be governed by the provisions of the said Act, except that they shall not be compelled to make the said road more than twenty feet wide, nor cover it with gravel or stone, unless it shall be found necessary, nor shall they be compelled to make a summer or side road thereto, nor shall they be compelled to make the said road more than sixteen feet wide, where it crosses the North Mountain.

2. *Be it further enacted*, That the Board of Public Works shall be, and they are hereby authorised, as soon as they may deem it expedient, and existing engagements will permit, to direct the Civil Engineer of the State, t[illegible]te and survey the said road, and report the advantages and disadvantages thereof.

3. *Be it further enacted*, That if any individual who shall be a subscriber for any portion of the stock of the company, hereby incorporated, shall become a contractor for constructing any part of the said road, and shall give bond to the President and Directors of the said company, with good and sufficient security, for the fulfilment of his contract, he shall be entitled to a credit for the amount of his contract, in payment of his subscription.

4. *Be it further enacted*, That the Board of Public Works shall be authorised to subscribe, on behalf of the Commonwealth, if they deem it expedient so to do, for one hundred and sixty shares of the stock of the said company: *Provided*, The said company consent to the appointment of two directors to represent the State's interest therein; that the State participate in the dividends in proportion to the amount of its stock; and that the amount of the subscription hereby authorised, be appropriated exclusively towards the completion and *improvement* of the said road.

5. *Be it further enacted*, That so much of the Act, entitled, "An Act incorporating a company to establish a turnpike road from Covington to Lynchburg, and for other purposes," passed March the first, eighteen hundred and twenty-six, as comes within the purview of this Act, is hereby repealed.

6. This Act shall be in force from and after the passing thereof.

TITLES OF ACTS,

Relating to the Chesapeake and Ohio Canal Company, viz:

Ch. 38.—An Act incorporating the Chesapeake and Ohio Canal Company.

(Passed January 27th, 1824.)

Ch. 53.—An Act to amend the Act, entitled, "An *Act incorporating* the Chesapeake and Ohio Canal Company."

(Passed January 26th, 1826.)

Ch. 63.—An Act giving the assent of this State to an Act to amend the Act incorporating the Chesapeake and Ohio Canal Company, as passed by the State of Maryland.

(Passed February 26th, 1827.)

Ch. 105.—An Act giving the assent of this State to an Act further to amend the Act incorporating the Chesapeake and Ohio Canal Company, passed by the State of Maryland.

(Passed February 26th, 1828.)

Ch. 77.—An Act further to amend the Act incorporating the Chesapeake and Ohio Canal Company.

(Passed February 27th, 1829.)

RESOLUTIONS.

Preamble and Resolution directing the Principal Engineer to survey James and Jackson's Rivers.

(Agreed to by both Houses, March 9th, 1827.)

Whereas, it is represented to the General Assembly, that the improvement of the navigation of the James and Jackson's River, by a continued canal, is not the most expedient mode that can be adopted: And whereas, the plan recommended by the Engineer of the State, by a still water navigation, by locks and dams, may be advantageously modified on account of the following objections, viz: First, that it will cost considerably more than if modified in the way which will be herein directed. Secondly, taking the distance between Maiden's Adventure and Lynchburg, (one hundred and twenty miles,) in which the fall in the river is stated to be about three hundred and sixty feet; then, supposing the dams to be raised, upon an average, five feet above the surface of the water, (which is as high as can well be presumed, seeing it is proposed to have low dams,) there would be seventy-two dams and locks; the chance of finding some of them out of order, and the delay of the tow-boat, (which must wait for all the boats it has in tow to pass, one at a time, before it can proceed on its passage,) would be a heavy burthen upon the commerce of the river; and the expense of keeping seventy-two lock keepers, a heavy item in the annual charges upon the establishment. Thirdly, it would throw the water back into every creek and rivulet which comes into the river, (they being most generally low and sluggish near their mouths,) where it would become stagnant, and produce deleterious effects upon the health of all who reside on or near the river; an objection which ought to have much weight, because the health, indeed the lives of individuals, cannot be estimated in money; add to this, the damages for injuries to the adjoining lands, and harassing applications for compensation for incidental injuries to crops, from floodings, since from all reasonable calculations, the elevation of freshes, and the consequent frequency of overflowings, will be increased by a succession of dams from one end of the navigation to the other. And whereas, it is deemed most expedient to clear out the bed of these rivers, in all parts where their current is gentle; where sluices are found, to graduate them, in all places where they can be graduated *consistently* with true economy, so as to give from two and a half *to three* feet depth of water, in the driest seasons. And where *the fall* is so great as not to admit of such improvements, *let* dams and locks be introduced, taking care before any dam is erected, to designate the trace which the boat is to pursue, and to blast out such rocks as are studded in that trace, *and will* not be covered deep enough when the water shall be *raised, to prevent* the boats from striking them; a precaution which *would* be required under any system of lock and dam navigation. And here it may be remarked, that the mischief to the health of individuals, which is apprehended from the *still-water* navigation before spoken of, will rarely be encountered upon *this* plan, because a creek or rivulet is seldom seen to flow into the river where there is a fall of much magnitude; for the lateral streams, as they approach the river, constantly seeking a low level, will make their way into it below the falls, or *if they* are forced into it opposite to the falls, they are *precipitated* over the same bed of rocks which causes the fall in the river, and consequently, there is seldom any danger that the water will flow back into them to an extent sufficient to annoy the health of the inhabitants of the adjoining country: On the contrary, when they fall into the river between one ripple and another, there being nothing impenetrable to divert their passage, the soft low grounds yield to their excavation, till their beds become almost as low as the surface of the water *in* the river: In addition to which, accident commonly *leads them* through a meandering course, which would increase *the* amount of stagnant water that would be forced into them, by raising the river above its usual height. The objections urged against sluice navigation are, the difficulty of overcoming the current in ascending, and the danger in descending; but these objections cannot apply to the mode of improvement now suggested; for the example cited by the Engineer, page 454, supposes a steam-boat stemming a current of five miles an hour; and again, in page 461, four feet in a quarter of a mile, or sixteen feet per mile, is taken for an example, where it is stated that the current is four miles an hour; from which, it may be presumed, that where the current is five miles an hour, the fall is about twenty feet in a mile. Without undertaking to calculate the difference between stemming a current produced by a fall of twenty feet to the mile, and one produced by a fall of two feet to the mile, it will be perceived that the resul be widely different. The fall in the river from Maiden's Adventure to Lynchburg, being three feet to the mile, let one-third of that be overcome by locks and dams, and the balance would be reduced to an average of two feet to the mile; but as in making this reduction, there would be many particular places exceeding this average declivity, let one hundred and sixty feet be overcome by dams and locks, and the balance of two hundred feet be distributed upon all the gentle portions of the stream, and these portions would far exceed in distance the proportion of two hundred to one hundred and sixty, because the one hundred and sixty feet would be overcome at the rapids, where a great deal of fall would be inundated in a short distance. And again, these dams being located at the rapids, where the fall is considerable, and little or no mischief to be apprehended from them, may be raised to a height of seven or eight feet average, so that in the whole distance from Maiden's Adventure to Lynchburg, there would not be more than twenty-two dams, perhaps not as many. By adopting this mode, we should avail ourselves of all the advantages which the natural stream affords, and we should apply our aid only where it is necessary; we should save the expense of fifty dams and locks, and of fifty lock keepers; we should relieve the people on the river from the appalling apprehension of losing their health, and perhaps their lives: And let it be supposed that the improvement of the sluices, and the bed of the river between one dam and another, would cost as much as the additional number of dams and locks, (a very unreasonable supposition,) yet the saving of expense in repairs, and lock-keepers, without adverting to the all-important consideration of sparing the health of so many individuals, should decide the judgment in favor of this mixed mode of improvement. And whereas, in order to enable the General Assembly justly to appreciate the intrinsic and relative merits of the plan of improvement, as herein-before recommended, by a mixed system of sluices, and locks and dams, it is fit and proper to avail itself of the lights to be furnished by the Civil Engineer of the State:

Resolved, therefore, by the General Assembly, That the Civil Engineer be instructed, as soon as practicable, during the ensuing season, having regard to his other duties, to employ the necessary assistance, and make an accurate survey of the James and Jackson's River, with a view to the mode of improvement suggested above: beginning at Maiden's Adventure Falls, and proceeding to Dunlap's Creek, if practicable, or as far up as the season will allow, designating the site of each, dam that will be necessary, and its height, stating the length and fall of the intermediate spaces, and advising the best mode of improving these spaces, and whether in his opinion there is any place where a short canal is necessary. And that he report in detail to the next Legislature, the estimated cost of the whole, in such small sections as he may deem most convenient and advisable, with any other matter that he may think expedient. (*See Engineer's Report, page 229.*)

* * *

Resolution for a survey of the Pianketank River.

(Agreed to by both Houses, January 15th, 1827.)

Resolved, That the Board of Public Works be instructed to enquire into the expediency of directing the Engineer of the State, so soon as existing engagements will permit, to examine the Pianketank River, from Turk's Ferry to the highest point in the Dragon Swamp, which can be made navigable for flat bottom boats, and to report whether said stream can be rendered navigable for boats, to what extent, and at what probable cost; and that the said Board report thereupon, as soon as convenient, to the General Assembly.

* * *

Resolution directing an enquiry into the propriety of subscribing to the stock of the Lower Appomattox Company.

(Agreed to by both Houses, January 18th, 1827.)

Resolved, That the Board of Public Works be requested to enquire into the expediency of subscribing for two-fifths of the stock of the Lower Appomattox Company, and the terms and conditions proper for such subscription, and that they make report to the General Assembly.

Resolution directing a survey of the North Fork of Pamunkey River.

(Agreed to by both Houses, January 18th, 1827.)

Resolved, That the Board of Public Works be authorised, if they shall deem it expedient, as soon as existing engagements will permit, to direct the Principal Engineer of the State, to make as early a survey as practicable, of the North Fork of the Pamunkey River, and to prepare estimates of the probable expenses of improving the navigation of the said river by dams and locks.

⁂

Resolution requiring the Principal Engineer to survey the route for a road from Gauley Bridge to Salem, in the county of Harrison.

(Agreed to by both Houses, January 24th, 1827.)

Resolved, by the General Assembly, That the Board of Public Works be instructed to enquire into the expediency of directing the Engineer of this State, so soon as existing engagements will permit, to survey and locate a road, the most practicable route from Gauley Bridge to Nicholas Court-house, from thence to Haymond's Salt-works, and from thence to Lewis Court-house, (the distance supposed to be about eighty miles,) and from thence to Salem, in the county of Harrison, and that the said Board report thereupon, as soon as convenient, to the General Assembly.

⁂

Resolution authorising the Board of Public Works to require the Principal Engineer to survey the territory between the head waters of Roanoke and New Rivers.

(Agreed to by both Houses, January 24th, 1827.)

Resolved, That the Board of Public Works be authorised to require the Public Engineer, as soon as it may be practicable, without interference with previous engagements, to examine and survey the territory between the head waters of Roanoke and New River, so as to ascertain the practicability of a water communication between the same, and to make report thereof to the said Board.

Resolution directing a survey of a road from Warrenton, in the county of Fauquier, to Staunton.

(Agreed to by both Houses, January 9th, 1828.)

Resolved, That the Board of Public Works be instructed to enquire into the expediency of directing a survey of the most eligible route for a road from Warrenton, in the county of Fauquier, to Staunton, so soon as the previous engagements of the Principal Engineer will permit.

◆

Resolution directing a survey of the Roanoke River, from Pannill's Ferry, to its highest point of navigation, from thence to New River, and thence to James River.

(Agreed to by both Houses, January 26th, 1828.)

Resolved, by the General Assembly, That the Board of Public Works be instructed to direct the Public Engineer, as soon as existing engagements will permit, to survey and report the best mode, and the probable expense, of rendering the Roanoke River navigable, from Pannill's Ferry, to the highest practicable point of navigation on said river; that he examine and survey the country between such highest point of navigation on Roanoke River, and the New River, with a view to the practicability, best route, and probable cost, of connecting the navigable waters of the said rivers, by a line of communication by Canals or Rail-Roads, and of connecting the said line by Canals or Rail-Roads, with the nearest and best point of connection with the navigable waters of James River.

◆

Resolution directing an enquiry into the expediency of subscribing to the stock of the Middle Turnpike Company.

(Agreed to by both Houses, January 18th, 1828.)

Resolved, That the Board of Public Works be requested to enquire into the expediency of subscribing to the stock of the Middle Turnpike Company, and report thereon to the General Assembly.

◆

Resolution for a survey of the Appomattox River, and the country between the Appomattox and Roanoke Rivers.

(Agreed to by both Houses, February 27th, 1829.)

Resolved, by the General Assembly, That the Board of Public Works, and in their absence, the ex-officio members of

INDEX TO VOLUME V.

CONTAINING THE

11TH, 12TH AND 13TH ANNUAL REPORTS

OF THE

BOARD OF PUBLIC WORKS,

TO THE

GENERAL ASSEMBLY.

A.

Annual Reports of the Board Public Works,
  11th—For the year ending 30th Nov. 1826, 3
  12th Ditto ditto 1827, 173
  13th Ditto ditto 1828, 413
Appomattox Company, (*Upper,*)
  Return and report from, for 1826, 12
    Ditto, 1827, 184
    Ditto, 1828, 429
Appomattox Company, (*Lower,*)
  Return and report from, for 1826, 53
    Ditto, 1828, 431
  Act authorising subscription to, (24th Feb. 1827,) 549
Ashby's Gap Turnpike Company,
  Return and report from, for 1827, 186
    Ditto, 1828, 426
  Act amending the Act authorising subscription to, February 1827, 549
Acts of the General Assembly, 545
Auditor, Second,
  Portion of salary of, and his Clerk, payable in future out of the receipts of tolls, and other profits of the James River Company, 28th February, 1829, 569

B.

Blue Ridge Canal,
  See *Engineer's Reports*, and *Reports of D. S. Garland*,
  Tariff of tolls on tow-path of, March 7, 1827, 546
    Ditto on canal, 8th March, 1827, 547
    Ditto on bridge at, 548
Baldwin, Loammi, (*P. E.*)
  List of his reports in 1817 and 1818, 140
Baltimore and Ohio Rail-Road Company,
  Title of Act incorporating, 8th March, 1827, 551
Board of Public Works,
  To prepare tariff of tolls on Kanawha River, 1st March, 1828, 559
  To regulate tolls on the Chesterfield rail-road, 25th February, 1829, 580
  For directions relating to surveys, locations and examinations called for by Acts and Resolutions of the General Assembly, see *Duties of Principal Engineer*,
  For subscriptions made, and to be made, see *Subscriptions*.

C.

Cartersville Bridge Company,
  Return and report from, for 1826, 14
    Ditto, 1827, 189
  Engineer's report on, January, 1828, 347
  Act amending the several Acts concerning, 16th February, 1829, 578
Commissioner of the Kanawha Road and Navigation,
  D. S. Garland's report to the General Assembly for 1826, 118
    Do. 1827, 351
  Act dispensing with the appointment of, 1st March, 1828, 556
Crozet, C. (*P. E.*)
  Reports of. See *Engineer, Principal*.
Cocke, John H., Jr.
  Letter from, on the discovery of hydraulic lime near the Blue Ridge Canal, 245

Connection between the Eastern and Western Waters,
Comparative view by P. Engineer (in 1827) of the several routes, viz:
By Deep Creek route, 329
Casselman's route, 330
James and Kanawha route, 331
Comparative view of the same in 1828, 492
Canals, &c.
See *Reports of Engineer and Commissioner Kanawha Road and Navigation,*
Act to punish the burning, or otherwise injuring the works of, 8th March, 1827, 545
Connecticut River,
P. Engineer's observations in relation to the mode of improvement adopted on, (1828) 519
Chesterfield Rail-Road Company,
Act incorporating, 27th February, 1828, 560
Act amendatory thereof, 25th February, 1829, 579
To make report to the B. P. W. 580
Chesapeake and Ohio Canal,
Comparative view of, with other routes, as connecting the Eastern and Western Waters, 329
Ditto, 492
Titles and dates of the several Acts relating to the Chesapeake and Ohio Canal Company, 582

D.

Dismal Swamp Canal Company,
Return and report from, for 1826, 17
Ditto, 1827, 190
Ditto, 1828, 432
Dam and Lock Navigation,
P. Engineer's report on, 1827, 235
Plan of works, 243
Duties of P. Engineer,
For 1827, as prescribed by the B. P. Works, 167
For 1828, ditto, 409
For 1829, ditto, 527
Services required by Acts of the General Assembly, viz:
To locate and to prescribe plans for North Western Road Company, 554
To locate Warm Spring Mountain Road, 555

Duties of Principal Engineer, (*continued.*)
Examination of Black Water River, &c., 11th February, 1829, 590
Examination of Sleepy Creek, 1st Jan'y, 1829, 590

E.

Engineer, (*Principal*,) *C. Crozet*,
Reports of, in 1826, viz:
Survey for the Junction Canal Company, 58
" Between Nansemond and Black-water Rivers, 68
" Of Harrison's Bar, 69
" Of Rivanna River, 72
" Of the Mattapony, 103
Examination of the Dismal Swamp Canal, 65
" Staunton and James River Turnpike, 87
" Canal through the Blue Ridge, 90
" Canal near Richmond, 94
" Kanawha Turnpike Road, 93
" Little River Turnpike, 95
" Fauquier and Alexandria Turnpike, 95
" Manchester and Petersburg Turnpike, 98
" Lower Appomattox works, 99
Connection between the James and Kanawha Rivers, by means of Dunlap's Creek and Greenbrier River, 106
Location of road from Staunton to Riffle's Run, 80
Reports of, *in* 1827, *viz*:
Summary report of his operations in that year, 227
Survey of James River, with a view to a mixed improvement by sluices, and locks and dams, 229
Survey of North Anna River, 311
" For a road from Danville to Wythe Court-house, 319
" For a road from Lynchburg to Lexington, 322
" For a railway from the Chesterfield coal-pits, the nearest route to James River, above Fore's Fish-dam, 339
" For a connection between Roanoke and New Rivers, 327

Engineer, (*Principal*,) *C. Crozet*, (*continued*,)
  Location of the road over the Warm Spring Mountain, 321
  On the improvements most urgently required in the State, 329
  Examination of the Staunton and James River Turnpike, 334
  " Lynchburg and Salem Turnpike, 335
  " Blue Ridge Canal, 336
  " Canal near Richmond, 338
  Cartersville Bridge, the cost of re-building, and the probable revenue from 347
  Reports of, *in* 1828, *viz:*
  Summary report of his operations in that year, 473
  Survey for the improvement of the Rappahannock by locks and dams, 475
  " For a road from Middleburg to Strasburg, 505
  " For a road from Berry's Ferry to Strasburg, 506
  " For a road from Harrisonburg to Franklin, and thence to Beverley, 507
  Examination of the road from Staunton to Riffle's Run, 511
  " Piankitank, 512
  " Fauquier and Alexandria Turnpike, 513
  " Little River Turnpike, *514*
  " Falls Bridge and Leesburg Turnpikes, 514
  " Ashby's Gap Turnpike, 515
  " Canal near Richmond, 515
  " Canal through Blue Ridge, 524
  Location of the Middle Turnpike, 504
  Connection of New River and Roanoke, 484
  " Roanoke and James River, 499
Examinations, *Surveys and Locations*,
  List of all that were made from 1816 to 1825, both years inclusive, 140
  For those made in 1826, 1827 and 1828, see *Engineer*,
  For those to be made under Acts and Resolutions of the General Assembly, see *Duties of Engineer*.

F.

Fund for Internal Improvement,
State of, 1st December, 1826, 3
Ditto, 1827, 173
Ditto, 1828, 414
Act placing dividends on future subscriptions of the Board, on the same footing with those made by individuals, 555
Pledged for the payment of the deficiency in the James River Company's funds to pay interest on a loan of $ 50.000, by the Act of 30th January, 1829, for the extension of the Kanawha Turnpike to Big Sandy, 563
Do. do. for $ 10.000, to discharge unsatisfied claims. 28th February, 1829, 567

Fairfax Turnpike Company,
Return and report from, for 1826, 25
Ditto, 1827, 194
Ditto, 1828, 437

Falls Bridge Turnpike Company,
Report and return from, for 1826, 27
Do. 1827, 196

Fauquier and Alexandria Turnpike Company,
Return and report from, for 1826, 26
Ditto, 1827, 195
Ditto, 1828, 438
Act authorising lottery to raise $ 30,000, to improve road, 30th January, 1829, 580

G.

Governors' Messages to General Assembly,
Extract from Governor Tyler's message, Dec. 1826, in relation to the internal improvement of the State, 110
Extract from Gov. Giles's message, December, 1827, 396

Gauley River Bridge,
Contract for re-building made, 35[illegible]
Act providing for re building, 546

Garland, D. S. Com'r K. R. and N.
Report of to General Assembly, 1826, 119
Ditto, 1827, 351

J.

James River Company,
Revenue of, from Lower Canal, 1826, 162
Ditto, 1827, 390
Ditto, 1828, 531
Revenue of, from Kanawha Road, 1824 to 1828, both inclusive, 534
Revenue of, from Blue Ridge Canal, 1828, 533
Ditto, Kanawha River, 1828, 535
Expenditures out of loans obtained by, 1826, 164
Ditto, 1827, 395
Ditto, 1828, 543
Balance in the Treasury belonging to, 1826, 165
Ditto, 1827, 394
Ditto, 1828, 544
List of articles brought down Lower Canal, in the year 1826, 166
List of articles ascending and descending Lower Canal, 1827, 391
Ditto, ditto, 1828, 536
List of articles ascending and descending the Blue Ridge Canal, 1828, 538
List of articles ascending and descending the Kanawha River, 1828, 540
General statement of tolls received on the western improvements, from their completion to 1828, inclusive, 542
To appoint an agent to superintend the Kanawha Road and Navigation, 1st March, 1828, 556
To appoint a receiver of tolls on Kanawha River, 1st March, 1828, 559
Act directing alterations in the slopes of the dams across James River, for the passage of fish, [illegible] February, 1829, 562
Act to extend the Kanawha Road to the mouth of Big Sandy River, to borrow for that purpose, a sum not exceeding $50,000, 30th January, 1829, 562
To pay the amount of damages accruing from the extension of the Kanawha Turnpike Road, and the [illegible] owners, 30th January, 1829, 564 5
Exempting, under certain conditions, from keeping up farm bridges and fences, and sundry duties imposed on them, 28th Feb'y, 1829, 567

James River Company, (*continued*,)
  Duties of, in relation to collection of tolls on the Kanawha River, and erecting buoys and beacons, and clearing obstructions in the same, 27th February, 1829, 570
  Stock of, by whom owned, 533
  To erect a dam in a certain event, from Confluence Island to the northern abutment of Mayo's Bridge, &c., 28th February, 1829, 573
Inclined Planes.
  Principal Engineer's remarks in relation to, 517
James River Canals.
  See *Reports of Principal Engineer, and Commissioner Kanawha Road and Navigation.*
James River Company Surplus Fund,
  Amount of surplus in 1826, 163
  Ditto, 1827, 390
  Ditto, 1828, 532 & 542
  Certificates belonging to, directed to be sold, and proceeds appropriated, 546
James River,
  Report of P. Engineer, on improvement of, by locks and dams and sluices, 229
  Estimate of cost and results of improvement by locks and dams, 252
  Governor Tyler's remarks on the advantages of completing its navigation to Covington, 1826, 111
  D. S. Garland's ditto, 1827, 357

K.

Kanawha Turnpike Road,
  Report of Principal Engineer on, 1826, 93
  Report of D. S. Garland, Commissioner, &c. 125
  Report of J. C. Warren, Engineer, &c. 131
  Report of D. S. Garland, Com'r. &c 1827, 360
  Act repealing the Act of 1810, concerning the *Old Road*, 14th February, 1827, 551
  Act changing tariff of tolls on, 16th Feb. 1828, 556
  Act providing for the extension of, to Big Sandy River, 30th January, 1829, 562
  Act concerning Kanawha Road and Bridges; prescribing tolls for Greenbrier Bridge, and regulations respecting gate keepers, and persons going to and from mill, 566

Kanawha River,
  Report of D. S. Garland, Com'r. &c. on, 1826, 130
  Report of J. C. Warren, Engineer on, " 133
  Report of D. S. Garland, Com'r. on, 1827, 366
  Report of I. Staples, Engineer, &c. on, 1827, 381
  Act reducing tolls on, 1st March, 1828, 557
  Act prescribing tariff of tolls on, and regulations for collecting the same, and keeping the sluices free, 27th February, 1829, 569
Kanawha Road and Navigation,
  Report of Commissioner of, to General Assembly, 1826, 119
  Do. 1827, 351

L.

Leesburg Turnpike Company,
  Report and return from, for 1826, 29
  Ditto, 1827, 195
  Ditto, 1828, 441
Little River Turnpike Company,
  Report and return from, for 1825, 30
  Ditto, 1826, 199
  Ditto, 1827, 202
  Ditto, 1828, 442
Lynchburg and Salem Turnpike Company,
  Report and return from, for 1826, 32
  Ditto, 1827, 204
  Ditto, 1828, 447
Loans.
  List of all loans made from the Fund for Internal Improvement to 1828, inclusive, 157
  Expenditures out of loans obtained by James River Company, 1828, 164
  Loan of $50,000, authorised for extending Kanawha Turnpike to Big Sandy River, 30th January, 1829, 562
  Loan of $[illegible], authorised to discharge unsatisfied claims against James River Company, for improvements, 25th February, 1829, 567
Lock and Dam Navigation.
  Principal Engineer's report on, 1827, 235
  Plan of Works, 243
Lime, Hydraulic.
  Found near the Blue Ridge Canal, 244

Locations,
  See *Engineer, Principal,* for those made.
  See *Duties of Engineer,* for those to be made.
Lotteries,
  $50,000 authorised to be raised for the Richmond Dock Company, 6th March, 1827, 550
  $50,000 authorised for the construction of a road from the western termination of the Staunton and James River Turnpike, to the Kanawha Road, 9th March, 1827, 551
  Act amending the Act concerning a lottery for the Richmond Dock Company, 8th Feb 1828, 560
  Act amending the Act for raising a sum of money by lottery to connect the Staunton and James River Turnpike with the Kanawha Road, 24th February, 1829, 579
  $30.000 authorised to be raised to improve the Fauquier and Alexandria Turnpike Road, 30th January, 1829, 580
Lexington and Covington Turnpike Company,
  Act incorporating, 19th February, 1829, 581

M.

Manchester and Petersburg Turnpike Company,
  Report and return from, for 1826, 36
    Ditto, 1827, 207
    Ditto, 1828, 448
M'Neil, Wm. G., (U. S. Engineer.)
  His letter to Gen. Macomb, on the connection between the James and Kanawha Rivers, by means of Dunlap's Creek, and Greenbrier River, 106
Moore, Thomas, (P. E.)
  List of his surveys in 1818, 143
    Ditto, in 1820, 1821, and 1822, 144
Moore, Thomas, and Isaac Briggs, (Engineers.)
  List of their surveys in 1819, 143

N.

Navigation,
  Sluice, P. Engineer's report on, 1827. 230
  Lock and dam, 235
  Plan of lock and dam works, 243
North Western Road Company,
  Act incorporating, 27th February, 1827, 551

P.

Potowmac Company,
- Report and return from, for 1826, 39
  - Ditto, 1827, 208
- Copy of proceedings in August, 1828, assenting to Acts of Maryland and Virginia, modifying the charter of the Chesapeake and Ohio Canal Company, 450

R.

Returns and Reports of Companies,
- (See also the respective titles,)
- To 1st December, 1826, 13
  - Ditto, 1827, 184
  - Ditto, 1828, 426

Richmond Dock Company,
- Report and return from, for 1826, 41
  - Ditto, 1827, 210
  - Ditto, 1828, 453
- Act dispensing with a lock above Mayo's Bridge, &c. February, 1827, 552
- Act authorising lottery for, 6th March, 1827, 550
- Act amending the same, 8th February, 1828, 560
- Act amending several Acts concerning, 28th February, 1829, 572
- To put a lock in the bank of the Dock, below or above Mayo's Island, as they may determine, 28th February, 1829, 573

Roanoke Navigation Company,
- Report and return from, for 1826, 43
  - Ditto, 1827, 212
  - Ditto, 1828, 454

Reports,
- Of the Board Public Works, (Annual,)
  - 11th for 1826, 3
  - 12th for 1827, 173
  - 13th for 1828, 413
- On the construction of certain roads between Richmond and the Kentucky line, &c. 403
- Of P. Engineer—See *Engineer, Principal.*
- Of Commissioner Kanawha Road and Navigation, and his Engineer, for 1826, 119
  - Do. do. 1827, 351
- Of Companies—See the respective titles.

Resolutions of the General Assembly,
- Passed at the Sessions of 1826-7, 7-8, and 8-9, 583

Rivers,
- For examinations of, &c. see *Reports of Engineer,* and *Commissioner Kanawha Road and Navigation*—and *Surveys, Examinations, &c.*
- See, also, respective titles.

Roads,
- For surveys, examinations and locations of, see *Engineer, Principal.*
- For those to be made, see *Duties of Principal Engineer.*
- See, also, *Kanawha Road.*
- Act authorising a lottery to connect the Staunton and James River Turnpike with Kanawha Road, 9th March, 1827, 551
- Act repealing the Act of January 17th, 1810, concerning the old Kanawha Road, 14th February, 1827, 551
- Act incorporating North Western Road Company, 27th February, 1827, 551
- Act incorporating the Warm Spring Turnpike Company, 8th March, 1827, 555
- Act instructing the P. Engineer to inspect and examine the location of the road from Staunton to Parkersburg, 28th February, 1828, 559
- Chesterfield Rail-Road Company incorporated, 27th February, 1828, 560
- Act of incorporation of Chesterfield Rail-Road Company, amended 25th February, 1829, 579
- Act providing for the extension of the Kanawha Road to Big Sandy River, 30th Jan. 1829, 562
- Act concerning the Kanawha Road and Bridges, 28th February, 1829, 566
- Act amending the Act incorporating the Warm Spring Turnpike Company, 12th Jan'y, 1828, 560
- Act incorporating the Lexington and Covington Turnpike Company, 19th Jan. 1829, 581

Rappahannock River,
- Act amending the Act for improving, &c. 21st January, 1828, 561
- Act authorising the extension of the navigation of, to Ward's Mill, 15th January, 1829, 574

S.

Staunton and James River Turnpike Company,
Return and report from, for 1827, 216
Ditto, 1828, 463
Shepherdstown and Smithfield Turnpike Company,
Report and return from, for 1826, 51
Ditto, 1827, 219
Ditto, 1828, 465
Snicker's Gap Turnpike Company,
Report and return from, for 1826, 46
Ditto, 1827, 220
Ditto, 1828, 466
Slate River Company,
Report and return from, for 1826, 48
Ditto, 1827, 215
Ditto, 1828, 461
Act concerning the Trustees of, 26th Feb. 1829, 575
Swift Run Gap Turnpike Company,
Report and return from, for 1826, 49
Ditto, 1827, 222
Ditto, 1828, 467
Surveys, Examinations and Locations,
List of all that have been made from 1816 to 1825, both inclusive, 140
List of those made by C. Crozet, in 1826, 7 & 8, see *Engineer's Reports* for those years,
List of those to be made in 1829, by order of Board Public Works, 597
For those directed by Acts and Resolutions of the General Assembly, see *Duties of Engineer.*
Subscriptions of the Board Public Works,
List of, from the creation of the Fund to 1826, inclusive, 13
Instalments on, due in 1827, and subsequently, 15
Ditto, 1828, 42
Ditto, 1829, 52
Act amending the Act authorising the subscription to the Ashby's Gap Turnpike Company, 549
Act authorising subscription to Lower Appomattox Company, 24th February, 1827, 549
Subscription authorised to North Western Road Company, 27th February, 1827, 554
Act providing that dividends upon subscriptions of the Board shall be made, and stand upon

Subscriptions of the Board Public Works, (continued,)
the same footing, with subscriptions by individuals, 20th February, 1828, 555
Subscription authorised to the stock of the Rappahannock Company, 21st January, 1828, 561
Authorised to the extension of the navigation of the Rappahannock River, 15th Jan. 1829, 574
Authorised to the stock of the Lexington and Covington Turnpike Company, 19th February, 1829, 582
Resolution directing Board Public Works to enquire into the propriety of subscribing to the Lower Appomattox Company, 18th Jan. 1827, 586
Resolution directing Board Public Works to enquire into the propriety of subscribing to the Middle Turnpike Company, 18th Jan. 1828, 589

Sluice Navigation,
Principal Engineer's report on, as applicable to James River, 1827, 230

Steam Engines,
Letters to Principal Engineer, on cost of, 308

Staples, John, (Engineer,)
Report of, on the state of the improvements made by the contractors on Kanawha River, 1827, 381

Schuylkill River,
Extract of a letter from the President of that company, in relation to its improvement by canals, and dams and locks, 520

Surplus Fund of James River Company,
Amount of surplus in 1826, 163
Ditto, 1827, 390
Ditto, 1828, 532 & 542

T.

Tye River and Blue Ridge Turnpike Company,
Return and report from, for 1826, 54
Ditto, 1828, 468

Tolls,
Tariff of, on tow-path of Blue Ridge Canal, March 7th, 1827, 546
Tariff of, on Blue Ridge Canal, 8th March, 1827, 547
Ditto, on bridge at Blue Ridge Canal, do. 548
Ditto, on the Gauley and Greenbrier Bridges, 1st February, 1828, 556

Tolls, (*continued.*)
On Kanawha River, reduced, 1st March, 1828, [illegible]
Tariff of, for the Kanawha River, to be prepared by Board Public Works, and submitted to succeeding Legislature, 1st March, 1828, 559
Tolls upon the Kanawha Road pledged for the payment of the interest, &c. on the money to be borrowed by Act of 30th January, 1829, 563
Tariff of, on Greenbrier Bridge, 28th Feb. 1829, 564
Tariff of, on Kanawha River, 27th Feb. 1829, 569
Regulations respecting the collection of, on Kanawha River, 27th February, 1829, 569
On Lower James River Canal, 1826, 163
Ditto, 1827, 390
Ditto, 1828, 531
On Blue Ridge Canal, 1827, 394
Ditto, 1828, 533
On Kanawha Road, 1826, 164
Ditto, 1827, 394
Ditto, 1828, 534
On Kanawha River, 1828, 535
Total amount of, on all the State improvements, in 1828, 532
Total amount of, on the Kanawha Road, from 1824 to 1828, inclusive, 534

W.

Wellsburg and Washington Turnpike Company,
Report from, for 1826, 52
Do. 1827, 225
Do. 1828, 471
Warren, James C., (*Engineer, &c.*)
Reports of, on Kanawha Road and River, 1826, 131
Warm Spring Mountain Turnpike Company,
Act incorporating Company, and directing the Principal Engineer to locate the road, 8th March, 1827, 555
Act to amend the Act incorporating, 12th January, 1828, 560
Road to be made according to the survey of the Principal Engineer, for the distance of five miles, 560

JAN 16 1942